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By William Brewster.

With One Map.

CAMBRIDGE, MASS., U. S. A.:
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No. 1. — *Birds of the Cape Region of Lower California.*

By William Brewster.

INTRODUCTION.

In 1887 Mr. M. Abbott Frazar spent about nine months collecting for me in Lower California. During this period he obtained upwards of 4,400 birds, among which were several new to science, besides a number hitherto unknown from the Cape Region. Of the quality of his specimens and of the industry and intelligence which he displayed in collecting them it would be impossible to speak too highly. Indeed, it is probable that no collection of equal size and excellence was ever before accumulated by any one man within so short a space of time. The skins are beautifully prepared, and the series representing the resident or more characteristic Cape birds are sufficiently large to illustrate very fully the individual, as well as age and seasonal, variations to which each form is subject. Mr. Frazar failed, however, to secure many nests or eggs and — what is even more to be regretted — his field notes, descriptive of the localities which he visited and of the habits, behavior, and songs of their most interesting birds, are, in most respects, disappointingly brief and inadequate. I have culled from his journals and from the evidence supplied by his specimens, every fact or suggestion which has seemed worthy of permanent record, and I have supplemented the matter thus obtained by drawing freely on the published accounts of other observers who have visited the same region, among whom Mr. Xantus, Mr. Belding, Mr. Bryant, and Mr. Anthony are, of course, the most prominent.

The biographical material gathered from these sources includes, I trust, all the information of obvious value and pertinence which is at present accessible, but it is undeniably inconsiderable in quantity and colorless in character. The simple truth is that the ornithologists who have thus far visited Lower California have devoted most of their attention to collecting and preparing specimens and but very little to making,

or at least recording, field observations. Thus it happens that while we have much definite knowledge respecting the physical characteristics and affinities of the birds of this region, as well as not a little concerning their respective areas of local occurrence or distribution, we know almost nothing of their habits, songs, and distinctive appearance or behavior when living. The nests and eggs of many of them also remain undescribed. In short, the time has not as yet arrived when anything more than the merest outlines of their life histories can be sketched.

The main portion of my paper treats only of birds which are definitely known to have occurred in the Cape Region, but in dealing with the distribution of such of these as are not confined to this area I have consulted — and frequently cited, also — all the more important records that I could find relating to the central and upper parts of the Peninsula as well as to southern California, and in addition I have outlined, briefly, the general range of each species or subspecies along the Pacific coast, hoping thereby to show more clearly the precise relations in which the different forms stand geographically to the Cape fauna.

Most of the strictly biographical matter relates either to birds which are peculiar to, or characteristic of, the Cape Region or to observations made within the limits of this territory, no attempt having been made to present life histories of those species which occur as migratory or winter visitors only. Exceptions to this rule have been made, however, in the cases of certain of the water birds whose breeding stations lie at no great distances, or whose breeding habits are of especial interest.

From this it will be gathered that my part in the work has been chiefly that of a compiler of facts observed or recorded by others, but I have personally contributed some original matter in the form of technical description and critical comment. In connection with my efforts to unravel some of the more difficult problems affecting the status or relationship of certain of the less well known birds I have received invaluable assistance from my friend Mr. R. Ridgway, who has supplied me with whatever specimens I have needed for comparison (including several types) from the collections of the United States National Museum, and to whom I am further indebted for much kindly encouragement and advice. I am under obligations, also, to Mr. E. W. Nelson, who has been kind enough to read my paper in the manuscript and to favor me with criticisms or suggestions, which have proved of the utmost service. Nor should I omit in this connection to express my thanks to Dr. J. A. Allen and Mr. F. M. Chapman, for the opportunities which they have given me of examining specimens preserved in the collections

of the American Museum, and to Dr. C. Hart Merriam, Mr. Samuel Henshaw, Mr. Walter Faxon, Mr. Harry C. Oberholser, and Dr. Charles W. Richmond, for assistance of various kinds. In short, all these as well as others of my friends have responded most generously to the calls which I have made upon them.

The task of preparing the synonymy has been intrusted to my assistant, Mr. Walter Deane, who has performed it with infinite care and faithfulness, verifying every citation by direct examination of the original text. A fuller synonymy has been given for the thirty or more birds which appear to be either peculiar to the region under consideration or especially prominent members of its summer fauna, but in the cases of most of the others Mr. Deane has cited only publications which relate more or less directly to this region, giving no references to the more general works on ornithology save where these include original descriptions, illustrations, or critical discussions strictly pertinent to the subject in hand. In other words, the synonymy is intended to serve, at least primarily, merely as an index to what has been published on the characteristic birds of the Cape Region, and on the *local history* only of those which visit it during migration or in winter, or which breed but casually or very sparingly within its confines.

All the original measurements are in inches and hundredths of an inch.

Cape Region of Lower California.

Mr. Bryant[1] defines this region as comprising "that terminal portion of the peninsula southward from the northern base of the mountains between La Paz on the Gulf shore and the town of Todos Santos on the Pacific Coast." He adds, "There is no more sharply defined faunal and flora area, that occurs to me now, excepting that of islands, than is embraced in the region above defined. Part of it lies within the Tropic of Cancer, and the balance along the Gulf shore, and having mainly a Gulf drainage. The climate as influenced by its peculiar sea-bound tropical situation and rainy seasons is distinctively different from anything existing to the northward. . . . Mainly a mountainous section, some of the peaks being 6,000 feet high, it is separated for an hundred miles or more from the peninsula northward by a long expanse of low, level or rolling country."

Mr. T. S. Brandegee writes me: "In reply to your question con-

[1] Zoe, II. 1891, 185, 186.

cerning my limitation of the Cape region, I will answer that for the flora it seems best to include only the region south of a line between La Paz and Todos Santos. This line is nearly a straight line, and follows along the northern base of the Cape Mountains. The trail between La Paz and Todos Santos does not appear to ascend more than 150 feet above sea-level at any place, and there is a large extent of nearly level country to the north of it. The Cape Region will be, then, a mountainous country separated from the northern mountains by an extent of low land."

The depressed and exceedingly arid desert tract above mentioned evidently forms nearly as complete a barrier to the northward and southward extension of plant and animal life as would a similar expanse of ocean. Indeed, there can be little doubt that the comparative isolation which its presence affords to the region lying to the southward has had very much to do with the striking faunal and floral characteristics of the latter area. Another factor of perhaps almost equal potency is the comparatively humid climate of the Cape Region with the resultant (but also only comparative) luxuriance of its vegetation.

The limitations so concisely yet clearly stated by Mr. Brandegee are those which I have adopted in the present paper, but I have ventured to construe these (wholly without his knowledge or sanction) as including the island of Espiritu Santo, whose fauna, judging by what little we know of it, seems to be essentially similar to that of the region lying about and to the southward of La Paz.

It was my original intention to insert in this connection some generalizations bearing on the characteristics and affinities of the fauna and flora of the Cape Region, as well as to tabulate the names of its various birds in lists of permanent residents, summer residents, winter residents, migratory visitors, etc., but I have found so very many cases where all the information at my command has proved insufficient to enable me to reach definite conclusions, that I have become convinced that the time has not as yet arrived when it is either safe or profitable to attempt anything of the kind just indicated; I may venture to say in passing, however, that, as Professor Baird pointed out in 1859, the characteristic birds of the Cape Region appear to be more closely related to those of Arizona and Northwestern Mexico than to those of California, although certain recent developments have shown that this rule is not wholly without exceptions.

Narrative.

Gulf Trip. — Landing at La Paz on January 24, Mr. Frazar remained in the immediate neighborhood of that place until February 26, when he embarked in a small vessel and visited successively the islands of Espiritu Santo, San José, Montserrat, and Carmen, which lie stretched out in a series or chain in the Gulf of California to the northward of La Paz and not far from the eastern coast of the Peninsula. He describes them as "all alike, very hilly, almost devoid of vegetation," and practically without water excepting where it is obtained by digging.

On Carmen Island, the largest of the series, he spent three days, during which he skirted the entire southern shore, landing at several different places. There were but few birds, and most of these were waders or water fowl. The only species of which specimens were obtained were the Large-billed, San Benito, Brewer's, and Desert Sparrows, the American Raven, the St. Lucas Sparrow Hawk, the Black-bellied and Wilson's Plovers, the Least and Spotted Sandpipers, Frazar's Oystercatcher (of which two specimens, including the type, were taken here), the Western and Heermann's Gulls, the Farallone Cormorant, and the American Eared Grebe. In addition to these Mr. Frazar mentions seeing a Western Mockingbird, a few Verdins and Gnatcatchers, an Orange-crowned Warbler, one or two Costa's Hummingbirds and a number of Fish Hawks.

On March 10 Mr. Frazar landed on the shore of the Peninsula opposite Carmen Island, and proceeded inland some three or four miles to the base of the Victoria Mountains,[1] crossing a belt of country covered with dense brush and having much the same bird fauna as the region immediately about La Paz, save that a number of the species which occur at the latter place were apparently wanting in this locality.

The next day was spent in a ravine some three miles in length, which penetrates deep into the heart of the mountains, and forms the course of a slender, trickling stream, the only running water, it was said, which at that time existed among these mountains. Here he found a flock of Arkansas Goldfinches, considerable numbers of Xantus's Hummingbirds, a female Allen's Hummingbird, a few pairs of Black Pewees, a Phainopepla, and a Sharp-shinned Hawk, besides many species (none of which are enumerated) which he had previously noted at La Paz.

[1] A subgroup or chain of the Sierra de la Gigantea range, not to be confounded with the Victoria mountains south of La Paz.

On the 12th he went to Loreto, where a day devoted to collecting yielded only two or three specimens each of the Titlark, Black-bellied Plover, and Turnstone.

The return trip to La Paz was made in an open canoe, for the first half of the distance along the shores of the Peninsula, thence by way of San José and Espiritu Santo Islands, on both of which Mr. Frazar landed. He characterizes them briefly as "like the other islands," but adds that the coast line of Espiritu Santo is broken in a few places by small inlets bordered by mangroves. It will be remembered that the type specimen of Belding's Rail was obtained on this island, no doubt in one of the little inlets just mentioned.

During the expedition the following water birds were noted: —

1. American Eared Grebe. Common about Carmen Island, March 6–10.
2. Craveri's Murrelett. On March 1 numbers were found off the western shore of San José Island. None were seen here during the return trip, but on March 15 a good many were met with near the northern end of Espiritu Santo Island. The species was observed *only* on these two occasions.
3. Heermann's Gull. Two breeding colonies were visited, one on a small rocky island between Loreto and Carmen Island, on March 13, the other on Montserrat Island the following day. In both localities the birds had only just begun laying their eggs.
4. California Gull. A number of birds, most of them in immature plumage, were seen migrating northward on March 13, between Loreto and Carmen Island.
5. Black-vented (?) Shearwater. Large numbers of small, dark-bodied Shearwaters, which probably belonged to this species, were seen on March 6, about midway between Montserrat and Carmen Islands. A few others of similar appearance were also observed on March 16 off the northern end of Espiritu Santo Island.
6. Least (?) Petrel. A small, black Petrel seen near Espiritu Santo Island about the last of February must have been either this or the Black Petrel.
7. Red-billed (?) Tropic Bird. A Tropic Bird noted on March 4 near the shore of the Peninsula, not far from Montserrat Island, probably belonged to this species.
8. Farallone Cormorant. About a dozen nests containing nearly full-grown young were found on Montserrat Island on March 14. The species was also seen frequently about Carmen Island.

La Paz. — At La Paz Mr. Frazar collected from January 28 to February 26, and from March 19 to April 7, making his headquarters in the town, and covering as much of the surrounding country as could be reached in a day's walk or drive. He describes it as excessively dry and barren, in fact "burnt to a crisp" by a drought, which had continued unbroken for upwards of two years. The cattle had nearly all died of thirst or starvation, for there was no surface water anywhere and no grass, the only vegetation consisting of scattered bushes and cacti of various kinds.

Over much of this desolate region birds were exceedingly scarce, but in a few favored localities — such as that at the base of the range of hills immediately behind the town, where there were exceptionally dense and luxuriant thickets of bushes and occasional small trees — Mr. Frazar found in greater or less abundance such characteristic Lower California forms as the St. Lucas Thrasher, Baird's Verdin, St. Lucas Cactus Wren, St. Lucas Swallow, St. Lucas House Finch, St. Lucas Towhee, St. Lucas Cardinal, St. Lucas Pyrrhuloxia, Xantus's Jay, St. Lucas Flycatcher, Xantus's Hummingbird, and St. Lucas Woodpecker.

Along the borders of the neighboring bay were a few scattered fringes or clusters of mangroves intersected by tidal creeks and flooded at high water. These thickets furnished congenial haunts for Mangrove Warblers, Grinnell's Water-Thrushes, Belding's Rails, and Frazar's Green Herons, none of which, excepting the Water-Thrushes, were met with elsewhere by Mr. Frazar.

The shores or waters of this bay were also frequented by Large-billed Sparrows, Killdeer, Semipalmated and Wilson's Plovers, Gray Yellow-legs, Long-billed and Hudsonian Curlews, Reddish Egrets, Wood Ibises, Western Gulls, Caspian and Royal Terns, California Brown Pelicans, Man-o'-war Birds, Brandt's Cormorants, Pied-billed Grebes and other kinds of wading or water birds.

Triunfo. — On April 11 Mr. Frazar went to Triunfo, "a mining camp situated among the mountains, fifty miles south of La Paz, and at about the beginning of the oak level," although no trees of any kind were to be seen in the immediate neighborhood, all having been cut for use in the mine. The surrounding hills were excessively dry and barren, and even the arroyos had little vegetation, although they were inhabited by fair numbers of birds.

Within four miles of the camp, however, was a cañon, near the head of which water "bubbled from the ground" in sufficient quantity to form a brook of considerable size. For a distance of perhaps a quarter

of a mile below its source this stream was filled with water cresses and half concealed by overhanging bushes, canes, or bulrushes, while the narrow strip of bottom land through which it flowed was under high cultivation. Further down the cañon it sank into the sand, coming to the surface again just above where a dam had been erected, and forming here a small but deep pond, in which a pair of Baldpates were seen on one occasion. Near the margin of this pool stood a number of "evergreen oaks," and a dozen or more "large northern oaks" were scattered along the lower slopes of the neighboring hills.

This little oasis was one of the most verdant and attractive spots which Mr. Frazar visited and, as would be expected, it proved to be alive with birds, of which Belding's Yellow-throat, the Beautiful Bunting, and Xantus's Hummingbird were among the most numerous and attractive.

Another place of especial interest was a "hill" lying at a distance of about ten miles from the mining camp, and having "an elevation of some 3,500 feet above sea level." From its summit could be seen "very plainly the Pacific Ocean and the coast line for thirty or forty miles. In the opposite direction was the Gulf of California, fifteen miles away and seemingly at our feet, for the slope on that side was very abrupt to the plain, which was not over three miles distant. To the north lay the entrance to La Paz harbor. Southward the view was interrupted by the San Simon range of mountains. The road lay up a ravine where there was considerable water (the drainage from one of the mines) as well as some scattered oaks, perhaps twenty in all, none over fifteen feet high. Here we found a number of birds, but on the hill tops there were very few."

Mr. Frazar made a second visit to Triunfo in early summer (June 10–July 2), and a third at the close of the year (December 4–11).

Pierce's Ranch. — Immediately after his second visit to Triunfo Mr. Frazar spent nearly a month (July 4–30) at Pierce's Ranch or San José del Rancho, as it is locally called. Beyond the brief statement that "it is about fifteen miles south-east of Triunfo, on the Gulf slope among the hills on the oak[1] level," Mr. Frazar's notes contain no description of this locality. It yielded few birds of especial interest, excepting a single specimen each of the St. Lucas Robin and Louisiana Tanager and a good series of Viosca's Pigeon.

[1] An oak leaf obtained here by Mr. Frazar has been identified at the Gray Herbarium as that of *Quercus grisea* Liebmann.

Sierra de la Laguna. — The last few days of April, the whole of May, and the first week of June were spent on the Sierra de la Laguna. This is said to be the highest mountain on the Peninsula south of La Paz, although Mr. Frazar, who notes its altitude as about six thousand feet, thinks that several of the mountains which lie between it and Cape St. Lucas are but little inferior in elevation. He tells me that it is also called Rosario de la Laguna and Mount San Simon, but, if I understand him correctly, the latter name is more properly restricted to the highest of several peaks all of which, together with the broad-topped mountain mass on which they rest, and above which they rise only some two hundred or three hundred feet, are known collectively as the Sierra de la Laguna.

This and the neighboring mountains are invariably referred to in Mr. Belding's papers as the "Victoria Mountains," and the general range of which they form a part is marked "S. de la Victoria" on the map of Mexico compiled and drawn by Mr. Hendges and published (in 1900) under the auspices of the Bureau of the American Republics. Mr. Frazar assures me, however, that, so far as he was able to learn, the people of the Cape Region have no distinctive name for the range just mentioned, while he heard the term Victoria Mountains applied only to the group of mountains opposite Carmen Island which he visited during his trip up the Gulf of California.

The road by which Mr. Frazar approached the Sierra de la Laguna from Triunfo crosses a succession of cañons with their intersecting ridges, and hence is almost continually climbing or descending steep inclines. After passing Las Animas, a deserted ranch where the real ascent of the mountain begins, the trail becomes exceedingly difficult, and in places is almost impassable for pack animals. From the summit "the eastern, northern, and western sides of the mountain appear very abrupt," but towards the south the slope is more gradual. The distant view in this direction is interrupted by several mountains of considerable altitude. In the immediate foreground, at the base of the highest peak and scarce three hundred feet below it, lies a hollow completely surrounded by mountain-tops or ridges, whose inner sides, together with the depression towards which they trend, cover a total area of about four square miles. This is everywhere densely wooded with large oaks and pines,[1] the latter predominating on the lower ground and the former on the hillsides.

[1] These trees have been identified at the Gray Herbarium, so far as could be determined from leaves alone, as *Pinus ayacahuite* Ehrenb., and *Quercus emoryi* Torr.

Near the head of the hollow rises a stream of clear, cool water, at present everywhere confined within its banks but formerly expanding, at a point just above where it escapes by a narrow cañon through the encircling hills, into a shallow lagoon from which the mountain derived its name. After descending through the ravine to lower levels and mingling its waters with those of other mountain brooks, this stream is said to sink into the ground, reappearing again a few miles above the town of San José, below which it empties into the sea.

In this attractive little subalpine valley Mr. Frazar spent, as I have already stated, upwards of six weeks, collecting assiduously and obtaining full series of most of the birds which had been previously reported from these mountains as well as several novelties which I have since described. Unfortunately he was too early for nests and eggs. Indeed only a very few of the birds had begun laying up to the date of his departure (June 9). He was assured by the deer hunters and cattle herders whom he met that the height of the breeding season is not reached here before July. He attempted to return at this time, but was prevented from doing so by a serious illness.

On November 27, however, he paid a second visit to the valley, remaining there up to December 4. The weather, during this period, was cold and damp and the mountain shrouded in mist. There were but few birds, and of these the greater number belonged to feeble-winged or habitually sedentary forms, such as Titmice, Nuthatches, Jays, etc., most of the summer species having evidently descended to the lowlands or migrated to warmer latitudes, to pass the winter. Nor had their places been taken by winter visitors from further north, for the Ferruginous Rough-legged Hawk was literally the only addition made, on this occasion, to the list of birds observed the previous spring.

As the latter will be fully treated in their appropriate places in my paper, it seems unnecessary to mention here any but the more characteristic or interesting species, such as the St. Lucas Robin, Grinda's Bush-Tit, Ashy Titmouse, St. Lucas Nuthatch, Western Martin, St. Lucas Swallow, Mountain Towhee, Baird's Junco, St. Lucas Flycatcher, Large-billed Wood Pewee, Xantus's Hummingbird, Narrow-fronted Woodpecker, Hoskins's Pygmy Owl, Dwarf Horned Owl, and Viosca's Pigeon, most of which were abundant and in the perfection of their nuptial plumage.

San José. — At the close of his third visit to Triunfo Mr. Frazar proceeded to San José del Cabo by a road which crosses the mountains to San Antonio and next passes through San Bartolo, beyond which it

leads down an arroyo to the sea beach. Along this it continues for a distance of about ten miles and then turns inland, crossing a broad table-land to another arroyo, up which it runs to Santiago and thence across a second table-land to Miraflores, situated on still a third arroyo which the road follows for the remainder of the way to San José. Mr. Frazar spent the latter part of August, the entire months of September and October and the first twelve days of November, at this place, making daily excursions about its outskirts or to the neighboring sea-coast. His note-books and collections, as well as the published accounts relating to the experiences of Mr. Xantus, Mr. Belding, and Mr. Bryant, show that the locality is one of the most interesting and productive, ornithologically, of any in the Cape region of which we have definite knowledge.

San José is situated about one and one-half miles from the Gulf coast, on the edge of the arroyo, which, at this point, is upwards of two miles wide and almost perfectly level. Through it winds a good-sized brook, which rises among the mountains, and not far from their bases disappears beneath the ground, reappearing again some eight miles above the town and flowing past it over a broad, sandy bed on its way to the sea. Although at the time of Mr. Frazar's visit, there had been no rain for upwards of two years, this stream carried a considerable volume of water, much of which, however, was diverted from its natural channel to irrigate the bordering bottom lands. These are divided into gardens and yield good crops of sugar-cane, cotton, and oranges besides corn, beans, sweet potatoes[1] and such other vegetables as the inhabitants of the neighboring region require.

The banks of the stream, as well as those of the irrigating ditches are fringed in places with wild canes and dense bushes. "There are also a few trees, such as willows, palms, and a kind of poplar." About a mile below the town, the water forms numerous small pools filled with cat-o'-nine tails and floating vegetation, and just before reaching the ocean it spreads out into a shallow lagoon of about eight acres in extent which lies immediately behind the beach ridge. Its outlet was repeatedly closed, during Mr. Frazar's visit, by sand thrown up by the surf at high tide, but the water, after rising several feet above its normal level, would eventually burst through the temporary barrier and escape, sometimes by a new opening. From this point smooth sea-

[1] "Bananas do well at San José, but apples and potatoes they cannot raise, although the latter are grown successfully at Aqua Caliente." Bryant, Zoe, H. 1891, 195.

beaches backed by sand-dunes stretch as far as the eye can reach in both directions, to the southwest curving gently outward to form the rocky promontory known as San José del Cabo.

A distinction between this name and the shorter appellation San José, which, I believe, is the current and no doubt proper term for the village itself, was apparently made by Mr. Xantus in labeling his specimens, although there are reasons for believing that some of those which are marked "San José del Cabo" were really taken at or near the mouth of the river, and hence at some distance from the Cape itself. Mr. Belding employs both names in connections which indicate that he regarded them as synonymous. Mr. Bryant, in his Catalogue of the Birds of Lower California, invariably uses the longer title, applying it to all records relating to the village of San José, as well as to the neighboring sea-coast, without apparent regard to the form in which they originally appeared. No doubt, the fact that there are several San Josés, but only one San José del Cabo, in Lower California, prompted him to adopt this course, which, for the same reason, I have also followed, whenever it has seemed admissible, in the present paper.

It is not surprising that so rare a combination of attractive conditions as that just mentioned, — especially in a country so generally arid and barren as Lower California — should have given San José del Cabo an exceptionally rich and varied bird fauna. The smaller insectivorous or seed-eating birds find congenial shelter and abundance of food in the luxuriant vegetation with which the village and its immediate neighborhood are favored; reed-loving species, such as Marsh Wrens, Yellow-throats, Rails, and Gallinules, inhabit the pools lower down the river; the shallow lagoon at its mouth affords a perfect paradise for waders and waterfowl of many different varieties, while Plover, Sandpipers, Gulls, Terns, Cormorants, Pelicans, and even such ultra-typical marine birds as Petrels and Shearwaters, frequent the neighboring sandy beaches or at least pass over or near them on their flights up and down the coast.

SYSTEMATIC NOTICE OF THE BIRDS.

Colymbus nigricollis californicus (Heerm.).

American Eared Grebe.

Dytes nigricollis californicus Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (Cape Region).

Colymbus nigricollis californicus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 249 (Cape Region).

The American Eared Grebe is a common winter resident in the Gulf of California off La Paz as well as about the islands to the northward, where, during February and March, Mr. Frazar saw it frequently, often in large flocks and occasionally where the water was very deep. At San José del Cabo he met with it only once, on October 18, when a single bird was noted. Mr. Belding also mentions seeing it near La Paz. Mr. Bryant found it "common along the shores of Magdalena Bay, particularly at Magdalena Island. They were seen about the landing swimming in compact groups of from one to two dozen birds, the entire flock would dive almost simultaneously and appear again in a more scattered bunch a short distance away. Their tameness made them objects to be stoned by Mexican boys who occasionally killed and wounded some."

There is no evidence that the Eared Grebe breeds in any part of Lower California, although the southern limits of its known summer range lie not far to the northward, for it has been found nesting in California at Elizabeth Lake, Los Angeles county, and abundantly at Bear Valley Lake in the San Bernardino Mountains.[1] In winter it migrates as far south as Guatemala.

Colymbus dominicus brachypterus Chapman.

Short-winged Grebe.

Tachybaptes dominicus (not *Colymbus dominicus* Linnaeus) Belding, Proc. U. S Nat. Mus., VI. 1883, 351 (San José, Miraflores, and Santiago).

Colymbus dominicus (not of Linnaeus) Bryant, Proc. Calif. Acad. Sci., 2d ser., IL 1889, 250 (San José, Miraflores, and Santiago).

Of the thirty-one specimens of this Grebe collected by Mr. Frazar at Santiago about one-half are adults, the remaining half being young of various ages from chicks still in their natal down to fully grown birds in fresh winter plumage. On comparing these skins with eight West Indian examples of *dominicus* (two from Jamaica, three from the Bahamas, and three from Cuba), I find that the

[1] Grinnell, Pub. II. Pasadena Acad. Sci., 1898, 5.

characters by which Mr. Chapman has proposed to distinguish *brachypterus* from *dominicus* are very satisfactorily maintained. The males of both forms have considerably larger bills than the females, a fact which should be borne carefully in mind when birds from different localities are examined. The material before me furnishes, however, no male from Lower California with a bill as large as that of the smallest-billed female from the West Indies, and the difference in this respect between birds of the same sex from the two regions is very striking.

This little Grebe was first reported from Lower California by Mr. Belding, who says that it was "very common at San José, Miraflores, and Santiago, in the winter of 1882–'83, but not recognized the previous winter." Mr. Frazar found it only at Santiago in a lagoon of about two hundred acres in extent, the greater part of which was filled with a rank growth of tule, there being but little open water. In this lagoon during the latter half of November the Short-winged Grebes were very common, upwards of a hundred being often seen by Mr. Frazar in the course of a single morning. Among the specimens obtained here are several young birds which must have been hatched in the lagoon. Indeed one (No. 18,270), taken November 15, is a mere chick, barely one-third grown and still wholly in the down.

Although this Grebe has been attributed to the "valley of the Colorado"[1] River it seems probable that the resident colony above referred to was derived from western Mexico, where the bird is abundant and widely distributed. It is not known to occur anywhere in the central or northern portion of Lower California.

Podilymbus podiceps (Linn.).

Pied-billed Grebe.

Podilymbus podiceps Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (Cape Region), Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 250 (Cape Region).

The Pied-billed Grebe is common in winter about the Bay of La Paz and its inlets. It was also found by Mr. Frazar in September and October at San José del Cabo, where it "arrived" on September 12. It haunts chiefly, if not exclusively, the salt or brackish bays, or creeks near the coast and appears to desert at least the southern portion of the peninsula during the breeding season. This is somewhat remarkable, for the Pied-billed Grebe is said to breed throughout the whole of Mexico and Central America as well as most of South America and there would seem to be no reason why it should not nest with the Short-winged Grebes in the lagoon at Santiago.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 439.

Gavia imber (Gunn.).

Loon.

Colymbus torquatus Belding, Proc. U. S. Nat. Mus., VI. 1883, 352 (La Paz).
Urinator imber Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 250 (La Paz).

Although the Loon is common in winter along the coast of California as far south as San Diego Bay the only authority for its occurrence in any part of Lower California is Mr. Belding, who has recorded seeing two specimens at La Paz on January 27, 1883. The bird must be a rather rare visitor to this locality, which probably represents about the southern limit of its winter wanderings on the Pacific coast.

Brachyramphus hypoleucus Xantus.

Xantus's Murrelet.

Brachyrhamphus hypoleucus Xantus, Proc. Acad. Nat. Sci. Phila., 1859, 299 (orig. descr.; type from Cape St. Lucas). Baird, *Ibid.*, 301 (Cape St. Lucas), 306 (crit.; Cape St. Lucas). Coues, *Ibid.*, 1868, 64–66 (crit.; Cape St. Lucas). Elliot, Illustr. New and Unfig. N. Amer. Birds, II. 1869, pl. 72 (descr. and figures type specimen from Cape St. Lucas). Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape St. Lucas; San José).
Brachyramphus hypoleucus Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 502 (iris "pale blue," Xantus, MS.; Cape St. Lucas). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 250 (Cape Region).

This species was taken both at Cape St. Lucas and San José del Cabo by its discoverer, Mr. Xantus, in 1859, but rather curiously it does not seem to have been since observed near the southern extremity of Lower California, nor ever actually within the Gulf of California, where it is replaced by the closely-allied *B. craveri*, which appears to be strictly confined to the Gulf during the breeding season and practically so at all other times of the year. Mr. Anthony, who has found *B. hypoleucus* breeding on many of the islands off the Pacific Coast of Lower California north of Magdalena Bay, says that it "begins nesting in late January, though I have found fresh eggs as late as early April. Late in February they may be seen at sea in family parties consisting of the parents and one or two downy young, which are taken to the water the first night, I think, after they are hatched. The young stay in company with the adults until late in the year." He adds that among some seventy-five specimens of both sexes and all ages which he has taken between Santa Barbara Islands and Magdalena Bay only one has "suggested in any way the plumage known as *craveri*," while concerning the identity of this single exception he was evidently in some doubt.[1]

[1] Auk, XVII. 1900, 168, 169.

Off the coast of southern California Xantus's Murrelet is now known to occur more or less commonly at all seasons from San Diego to the Santa Barbara Islands, where it probably breeds. It sometimes ranges still further northward, for Mr. Loomis has reported[1] the capture of a single bird near Monterey on July 28, 1894, and I have seven specimens which were taken in the same locality by Mr. Alvin Seale in November and December, 1896, and January and February, 1897.

Brachyramphus craveri (Salvad.).

Craveri's Murrelet.

Uria craveri Salvadori, Atti Soc. Ital. Sci. Nat., VIII. 1865, 387–389 (orig. descr.; type from Gulf of California).

Brachyrhamphus craveri Coues, Proc. Acad. Nat. Sci. Phila., 1868, 66 (quotes orig. descr.; crit.). Coues and Streets, Bull. U. S. Nat. Mus., no. 7, 1877, 32, 33 (descr. eggs and habits; crit.; Isla Raza, Gulf of Calif.). Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21[2]), 1881, 57, no. 758; Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape St. Lucas).

[*Brachyrhamphus*] *craveri* Elliot, Illustr. New and Unfig. N. Amer. Birds, II. 1869, introd. (figures head and leg; quotes orig. descr.; crit.).

[*Brachyramphus*] *craveri* Gray, Hand-list, III. 1871, 100, no. 10,815.

[*Synthliborhamphus*] *wurmizusume* Coues, Key N. Amer. Birds, 1872, 344, part (Cape St. Lucas).

Synthliborhamphus wurmizusume Coues, Check List, 1873, 117, no. 628, part.

Brachyrhamphus craverii Coues, Check List, 2d ed., 1882, 132, no. 869.

Brachyramphus craverii Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 502, 503 (descr.; crit.; figures head, bill, and leg; coast of Gulf of Calif.; Island of Natividad).

Brachyramphus craveri A. O. U., Check List, 1886, 81, no. 26. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (Cape St. Lucas; Natividad Island).

B.[*rachyrhamphus*] *craverii*? Coues, Key N. Amer. Birds, 4th ed., 1894, 814 (crit.; figures head and leg; Lower Calif.).

B.[*rachyrhamphus*] *craveri* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 15 (descr.; Cape St. Lucas).

Micruria craveri Ogilvie-Grant, Cat. Birds Brit. Mus., XXVI. 1898, 595 (descr.; near Cape St. Lucas). Anthony, Auk, XVII. 1900, 168, 169 (crit.).

Endomychura craveri Oberholser, Proc. Acad. Nat. Sci. Phila., 1899, 201 (new genus to include *B. hypoleucus* and *B. craveri*).

[*Micruria*] *craveri* Sharpe, Hand-list, I. 1899, 131.

Mr. Frazar collected no less than twenty-five specimens of *B. craveri*, of which fourteen were adults in more or less worn breeding plumage, and eleven young of various ages and both sexes. Of the adults eight were males, and six females. On comparing this fine series with seven specimens of *B. hypoleucus*

[1] Proc. Calif. Acad. Sci., 2d ser., V. 1895, 211, 212.

[2] Also printed in Proc. U. S. Nat. Mus., III. 1880, 163–246.

taken at Monterey, California, in the winter of 1896–97 by Mr. Alvin Seale, I have become convinced that the doubts which certain writers have expressed[1] concerning the specific distinctness of *hypoleucus* and *craveri* are without foundation. The chief characters which appear to distinguish the two birds are as follows: —

B. hypoleucus. Upper parts blackish slate often with a decided tinge of bluish ashy; lining of wings clear, immaculate white; inner webs of outer primaries nearly or quite pure white to within a short distance from the tips; many of the dark (bluish slate) colored feathers on sides of body conspicuously tipped with white.

B. craveri. Upper parts seal brown; lining of wings smoky gray or grayish white, many of the feathers with conspicuous spots or blotches of faded ashy brown; inner webs of all the primaries plain brown only a shade or two lighter than that of the outer webs and never approaching white save at the extreme bases of the feathers, which are sometimes brownish white; dark colored feathers on sides of body without light tipping.

The clear slaty tone of the upper parts in my examples of *hypoleucus* may be due to the fact that the birds were all taken at somewhat earlier dates in the winter than any of my specimens of *craveri*, but the other characters above mentioned are obviously not of a kind likely to be materially affected by mere seasonal differences of plumage.

The dissimilarity in respect to the color of the wing lining has been long known, only its constancy as well as its significance having been questioned. In the specimens before me it is absolutely constant, at least within certain limits. Most of my specimens of *craveri* have the under coverts conspicuously blotched and spotted with slaty or brownish on a smoky or ashy white ground, but in a few birds the lining of the wing is pure white and, at first glance, apparently almost immaculate. On close inspection, however, I find that all such specimens in my series have the white or whitish on most of the under wing coverts confined to the tips and edges of the feathers, their central portions being either slaty or brown. When the plumage is disarranged these dark markings become at once conspicuous.

The coloring of the wing lining varies greatly in young birds. The natal down which, at first, completely clothes the under surface of the wings is apparently always uniformly dark (reddish brown). Among the birds which have shed this down some have the under wing coverts dark slate or slaty brown relieved by only a few whitish markings on the tips of the feathers. With others of apparently similar age the under surface of the wings is not darker than in most of the adults. As a rule, however, the ground color of the under coverts appears to become lighter as the bird grows older, but the brown on the centers of the feathers evidently persists through life.

[1] Dr T. H. Streets and Mr. W. R. Ogilvie-Grant have suggested that *craveri* may be merely *hypoleucus* in full breeding plumage, while Mr. Anthony has "thought it possible that it may prove to be a plumage of the young carried through one or more moults."

In all my examples of *hypoleucus* the entire surface of the plumage which covers the under side of the wing is clear, immaculate white. Two birds have some concealed slaty or brownish on a very few of the longer coverts lying near the edge of the wing, but this is so restricted in extent and situated so near the bases of the feathers as to be scarcely noticeable, even when the plumage is violently ruffled; nor can it, I think, be fairly regarded as representing any real approach to the conspicuous and practically universal dark mottling found on the under wing coverts of *B. craveri*.

B. hypoleucus, as represented in my collection, invariably has the whole inner web of the first primary pure white to within about an inch and one half of the extremity of the feather. Beyond this point the white gradually recedes from the shaft, terminating on the inner edge of the feather about three quarters of an inch from its tip. The shaft itself, with an exceedingly narrow space (a mere hair line) bordering it inwardly, is brownish white. With each succeeding quill the white retreats further and further from the tip of the feather, at the same time losing something of its purity. Beyond the sixth or at most the seventh primary it is rarely appreciable excepting at the extreme bases of the feathers. None of my examples of *craveri* show well defined white areas on any of the quills, although the brown of their primaries is often a shade or two lighter on the inner than on the outer web and sometimes changes insensibly into brownish white near the bases of the feathers.

Two of Mr. Frazar's specimens (♂ No. 18,288 and ♀ No. 18,294), both taken on the same date (March 1), are young, about one-half grown and still clothed, for the most part, in down. This, over the upper parts, is seal brown, slightly redder as well as paler than in adult birds and with fine transverse markings of whitish besprinkling the back and rump — but not the crown nor the wings. The throat is grayish, the abdomen white. On the jugulum and breast the down has been replaced by true feathers — those of the second stage of plumage and everywhere silky white save on the sides of the breast, where they are flecked with minute spots of blackish. The sides of the body with the under as well as the upper surfaces of the wings are covered with down of nearly the same shade of brown as that of the crown and back, but there are also a few budding wing coverts, as well as quills, the expanding tips of which are decidedly darker in color.

Other specimens in my series illustrate practically every stage through which the young pass in arriving at maturity. They show that the natal down is shed first on the breast, next on the throat and abdomen, next on the wings, next on the back, next on the chin, next on the center of the crown, next on the forehead, last of all on the occiput and sides of the crown. With the disappearance of the last shreds of down the bird completes what I suppose must be called its first winter plumage, although this in specimens which, like mine, were hatched and reared in January and February is really assumed in early spring. After perfecting this plumage the young can be distinguished from their parents only by their shorter and weaker bills, by the darker (nearly dead black) coloring of their upper parts and by the presence of numerous fine but

rather conspicuous blackish spots or bars on the tips of the feathers of the sides of the breast and body.

According to Mr. Ridgway, Mr. Xantus took the present species at Cape St. Lucas in 1859, but it was not separated from *B. hypoleucus* until 1867. The type specimen of *craveri* is said [1] to have come from somewhere near the Isla Raza in the Gulf of California, where Dr. Streets found the species breeding in 1875. It appears to be mainly confined to the Gulf, but, according to Count Salvadori, has also occurred off the Pacific coast of Lower California, at the island of Natividad.

On March 1, 1887, while on his way to Carmen Island, Mr. Frazar found Craveri's Murrelets in considerable numbers near the island of San José, and on March 18 they were again met with off the northern end of Espiritu Santo Island. Three or four were usually seen together, each group consisting of a pair of old birds accompanied by a single young or of two old females and two young. Although none of the old females seemed to have more than one young each, all of those shot and examined showed *two* bare incubating spaces on the belly. Judging by the size of the young, the eggs from which they had been hatched must have been laid early in January and at some spot not far from where the birds were found, perhaps, as Mr. Frazar suggests in his notes, on a certain "small, round, high rock about an acre in extent opposite the island of San José and near the shore of the Peninsula."

The early date of breeding established by the capture of these young is a matter of surprise, for Dr. Streets obtained an adult female and her set of two eggs on Isla Raza (in the Gulf of California) in *April*, 1875. The eggs were "taken from a crevice of a rock at arm's length." They "resemble those of the tern, though rather elliptical-ovoid in shape. They differ from each other decidedly in the ground-color as well as in the markings. The darkest one is brownish-drab, with nearly half of the surface (on the larger end) heavily and confluently blotched with reddish-brown and dark brown, with a few neutral-tint shell-markings interspersed; the rest of the egg is sparsely sprinkled with smaller and more distinct markings of the same color. The ground of the other egg is clay-colored, or very pale stone-gray, with markings of the same color as before, but less heavy, more distinct, and smaller. There is the same aggregation of spots about the larger end, but not so fully carried out, and the rest of the surface is more thickly and uniformly flecked than the same portion is on the other egg. The darker egg measured 2.05 by 1.40; the other 1.95 by 1.35. The eggs of the species, as far as we are aware, have not before been described." [2]

[1] Salvadori, *Loc. cit.*

[2] Bull. U. S. Nat. Mus., no. 7, 1877, 32.

Larus occidentalis Aud.

Western Gull.

Larus occidentalis Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 549 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (Cape Region).

The Western Gull is resident along the Gulf coast of the Peninsula and is very common in places, especially in the Bay of La Paz, in winter. Mr. Frazar found a breeding colony of about twenty-five pairs on a small rocky island a little to the westward of Carmen Island. Most of the nests were only just begun, and but two contained eggs, one set, however, comprising the full complement of three. This was on March 13, a date about two months earlier than that at which the first eggs are usually taken on the Farallon Islands near San Francisco. The next day another breeding ground was discovered on the northern end of the island of Montserrat. Here some fifty pairs had congregated. Few of their nests were finished and only eight contained eggs, the number in each set varying from one to three. At both of the places just mentioned, the nests, which were made of seaweed, were built at the foot of the cliffs just above high-water mark and often in nooks or crevices.

Mr. Bryant notes the Western Gull as "tolerably common at Magdalena Bay in winter, and northward along the western coast," adding that it is "said to breed upon the Todos Santos Islands off Ensenada." Mr. Goss states [1] that a few nest on San Pedro Martir Isle.

The general range of this species includes practically the entire Pacific coast of North America.

Larus californicus Lawr.

California Gull.

Larus californicus Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (San José del Cabo).

Mr. Frazar notes this Gull as "common in winter at La Paz," and also met with between Loreto and Carmen Island on March 13, but his collection contains no specimens. Mr. Belding records it as "moderately common," and mentions seeing it at San José del Cabo as late as May 17. There is no probability, however, that it breeds anywhere in or near Lower California. Mr. Bryant "obtained immature birds at Magdalena Bay in the winter," but does not mention finding the species at any other locality.

The California Gull has occurred in winter on the western coast of Mexico as far southward as the Rio de Coahuayana, Colima. It is also a common winter

[1] Auk, V. 1888, 241.

bird on the coast of California, but it breeds exclusively in the interior. Mr. S. W. Denton tells me that in 1880 he found a large colony nesting on a volcanic island in Mono Lake (eastern California), which is perhaps the most southern locality where the eggs have been taken.

Larus delawarensis Ord.

Ring-billed Gull.

Larus delawarensis Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (Cape Region).

Mr. Belding includes the Ring-billed Gull in a list of birds found in the Cape Region[1] between December 15, 1881, and May 17, 1882, but he says nothing whatever about its comparative scarcity or abundance. Mr. Frazar did not meet with, or at least certainly identify, the species, nor is it mentioned by Xantus, Streets, or Townsend. According to Mr. Bryant it has been seen in winter at San Quentin Bay by Mr. Anthony. On the western coast of Mexico, nearly opposite Cape St. Lucas, Colonel Grayson found it "common during the winter months in the neighborhood of Mazatlan."[2]

Mr. H. W. Henshaw writes me that he has seen a few immature birds off San Buenaventura, California, during the month of November, and Mr. Grinnell characterizes the species as tolerably common along the coast of Los Angeles county in mid-winter, while at the latter season it has been found in small numbers at Monterey by Mr. Loomis.

The Ring-billed Gull breeds as far southward as southeastern Oregon, according to Captain Bendire.[3]

Larus heermanni Cass.

Heermann's Gull.

Blasipus heermanni Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 306 (Cape St. Lucas).

Larus heermanni Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

Young specimens of this Gull were collected at Cape St. Lucas by Mr. Xantus in 1859, and Mr. Belding gives the species without comment in his list of birds observed at La Paz in the winter of 1881–82. Mr. Frazar's collection contains three skins obtained on March 13, near Carmen Island. His notes include only one reference to the bird, a mere incidental mention of a specimen which he saw at San José del Cabo on September 6.

[1] Mr. Ridgway tells me that there is a specimen (♀ adult, No. 86,392) in the National Museum which was taken by Mr. Belding at La Paz, on February 15, 1882.

[2] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 246.

[3] Proc. Bost. Soc. Nat. Hist., XIX. 1877, 148.

Mr. Bryant says that Heermann's Gull was "the most common species of *Laridæ* met with at Magdalena Bay, nearly all being in immature plumage. They attend in large numbers the flocks of pelicans and cormorants when fishing. They occur commonly along both coasts [of the Peninsula], breeding on the islands."

According to Dr. Streets: — [1]

"Isla Raza is the particular breeding-place of these gulls in the gulf. It is a small, low island, about three-quarters of a mile long and half a mile wide. At the time of our visit (April), immense numbers of the birds were congregated there, preparatory to laying their eggs, which, however, they had not begun to deposit. We may safely say, without exaggeration, that there was a bird on every square foot of the ground, and others were continually hovering about overhead. Their incessant noise deadened all other sounds, and so intent were they in their all-absorbing duties of reproduction, that they seemed entirely unconscious of our presence amongst them. The formation of the island is a black volcanic rock, entirely destitute of vegetation. Through the long series of years during which these birds have made it a breeding-place, there has been going on a chemical reaction between the acids of their excrement and the bases of the rock, which has resulted in the formation of a new substance, composed largely of a tri-basic phosphate. . . . The altered rock being a softer material than the original is easily pulverized and worn off by the constant attrition of the birds' feet during their breeding-season."

Larus atricilla Linn.

Laughing Gull.

Mr. Frazar appears to be the only collector who has found the Laughing Gull in Lower California. He took a young female in autumnal plumage at San José del Cabo on September 6, and on November 9, at the same place, saw another bird which he thought belonged to the same species.

L. atricilla is said to inhabit the Pacific coast of Central America, and it has occurred near Mazatlan on the western coast of Mexico,[2] but it is not known to visit California. It seems probable, therefore, that Mr. Frazar's birds were stragglers from Mexico, rather than migrants from the north.

Larus philadelphia (Ord).

Bonaparte's Gull.

Larus philadelphiae Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).
Larus philadelphia Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (La Paz).

Mr. Frazar did not meet with this Gull, but it is included in Mr. Belding's list of birds observed in the Cape Region between December 15, 1881, and May 17,

[1] Bull. U. S. Nat. Mus., no. 7, 1877, 26.

[2] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 257.

1882, and a specimen was also taken by Mr. Townsend at La Paz on March 14, 1889. Mr. Bryant says nothing about its occurrence further to the northward along the Peninsula. It is "common at Puget Sound at all seasons of the year," according to Dr. Cooper, but appears "about San Francisco only from September to May," and does "not seem to migrate as far south as San Diego, although Dr. Cooper met with some at San Pedro, late in May, in their immature plumage." [1]

Mr. Grinnell considers [2] it only an "occasional winter visitant along the coast" of Los Angeles county, but at Monterey Mr. Loomis has found it in considerable numbers early in November and about the middle of May, although he has met with but a single individual in mid-winter.[3] These facts point to the conclusion that the Cape Region lies somewhat to the southward of the usual winter range of this species on the Pacific coast. It breeds chiefly, if not exclusively, north of the northern boundary of the United States.

Sterna caspia Pall.

CASPIAN TERN.

The only specimen obtained by Mr. Frazar is an adult female in winter plumage, shot at La Paz on January 25. It has the entire cap black, with all the feathers edged and tipped with white. The inner web of the first primary shows a broad space of white along its inner border much as in *S. maxima*, but the white is less pure, and the slaty next the shaft is paler and grayer, the contrast between the two colors being less striking than in *maxima*, although their line of demarcation is clearly defined. The next two primaries also possess some white.

S. caspia is described [4] as having the inner webs of the primaries "uniform slate or dark hoary gray," but this is by no means invariably the case, for in several of my specimens from the Atlantic coast of the United States the inner portion of the inner web of at least the first primary is appreciably lighter than the part next the shaft, although none of them show any close approach in this respect to the Lower California example. The latter measures: wing, 16.75; tail, 5.60; tarsus, 1.65; length of bill from nostril, 1.74; depth of bill at nostril, .73. In addition to its other peculiarities this specimen has an unusually white mantle.

This Tern, previously unknown from any part of Lower California, is noted by Mr. Frazar as "rare at La Paz in January, and not seen during my trip up the coast in March." The species has occurred in California, but is apparently rather rare everywhere on the Pacific coast of North America, where the southern limits of its winter range are not, as yet, definitely known.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 262.

[2] Pub. II. Pasadena Acad. Sci., 1898, 7.

[3] Proc. Calif. Acad. Sci., 2d ser., VI. 1896, 24, 25; 3d ser., II. 1900, 296, 297, 318, 350, 358.

[4] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 281.

Sterna maxima Bodd.

Royal Tern.

Thalasseus regius Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 549 (San José).
Sterna maxima Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 251 (Cape Region).

Mr. Frazar found the Royal Tern in January at La Paz, where it was rare, but somewhat more numerously represented than the Caspian. He did not meet with it on his trip to Carmen Island, but saw a few at San José del Cabo in September and October. At the latter place it was "common" on May 17, 1882, according to Mr. Belding. It is not mentioned either by Dr. Streets or Mr. Townsend, and apparently was not observed by Mr. Xantus. Mr. Bryant records it from the northwest coast in winter on the authority of Mr. Anthony, and from Cerros Island in April and May on that of Mr. Belding. It is a common bird on the coast of California, and is said to breed on the island of San Miguel. It ranges southward on the Pacific coast to Peru.

The collection contains two specimens — an adult female in nearly full nuptial plumage, shot at La Paz, on January 25, and a young or at least immature bird taken at San José del Cabo, on September 5.

Sterna elegans Gamb.

Elegant Tern.

Sterna elegans Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (La Paz.).

The only record that I can find of the occurrence of the Elegant Tern in the Cape Region is that by Mr. Townsend of a specimen shot at La Paz on March 14, 1889, but Mr. Bryant found numbers "around Magdalena Bay in 1888," and "obtained five adult plumaged birds" [1] at the same place the following season. The species occasionally wanders still further northward, for Dr. Cooper has reported its capture in San Francisco Bay.[2] There can be little doubt that it regularly frequents both coasts of the Gulf of California, and it probably breeds there, also, for there is an egg in the National Museum from Guaymas.

The Elegant Tern is believed to be confined to the Pacific coast of America, and is known to range as far south as Chili.

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 252.
[2] Proc. Calif. Acad. Sci., IV. 1868, 10.

Sterna forsteri Nutt.

Forster's Tern.

Sterna forsteri Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 252 (Cape Region).

This Tern is mentioned without comment in Mr. Belding's list of birds found in the Cape Region between December 15, 1881, and May 17, 1882. Mr. Frazar met with it only at San José del Cabo where he shot three specimens, one on September 29, the other two on the following day. Six in all were seen on these dates, and none either before or afterwards.

All three of the specimens secured are in winter plumage. One is perhaps an old bird. The other two have some of the feathers of the mantle tipped with faded brown and are probably young. In one of the latter the outer webs of the outer pair of tail feathers are uniform dark slaty for a terminal space of more than an inch in length, but the extreme tips of these feathers are white in both webs.

According to Mr. Bryant, Forster's Tern has been observed on the northwest coast of the Peninsula by Mr. Anthony. It occurs in various parts of California, and Dr. Heermann has found it breeding in the valley of the Sacramento River. On the whole, however, it appears to be much less numerous near the Pacific coast than in the interior of North America. It migrates as far south "as Guatemala, on both the Pacific and Atlantic side, and even to the latitude of Pernambuco, Brazil." [1]

Sterna hirundo Linn.

Common Tern. Wilson's Tern.

Mr. Frazar is apparently entitled to the credit of first detecting the Common Tern in Lower California. He observed it only at San José del Cabo, where six specimens, all young birds, were taken along the beach at various dates between the 5th and 30th of September. This species, although one of the most cosmopolitan of its tribe, "is not common — if indeed it breeds at all — on the Pacific coast; but throughout California — according to Dr. Heermann — it is very abundant along the rivers in the interior during the summer, retiring southward in the winter. Dr. Cooper never met with it on the sea-coast of California, . . . nor did he see it on the Columbia River." [2]

The accuracy of the statement attributed to Dr. Heermann in the passage above quoted is open to grave suspicion, for none of the field observers who have been so numerous and active in California during the past decade have found Wilson's Tern abundant or even common. Indeed, it appears to be doubtful if there are any really authentic records of its occurrence, especially in the interior of the state.

[1] Saunders, Proc. Zool. Soc. Lond., 1876, 651.

[2] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 297.

Sterna antillarum (Less.).

LEAST TERN.

The Least Tern also, if I am not mistaken, is now reported for the first time from Lower California, where, however, its presence is not surprising since it breeds abundantly on the coast of California as far northward, at least, as Los Angeles county, while it ranges southward along the western coast of Central America.

Mr. Frazar found it only at San José del Cabo, where, between September 6 and 12, six specimens, including both young and old birds in autumn plumage, were taken. He speaks of it in his notes as "not common, but yet more numerous than any of the other Terns observed at San José."

Hydrochelidon nigra surinamensis (Gmel.).

BLACK TERN.

This is the fourth species of Tern which Mr. Frazar has added to the fauna of Lower California. Like the other three, it was seen only at San José del Cabo, where it was "rare." A specimen was taken on the 6th and another on the 17th of September.

The Black Tern was found by Mr. Grayson "at Mazatlan, where it makes its appearance in September and October, and where it remains through the winter months." Dr. Cooper states that it "migrates through the interior valleys of California, and that some probably breed about the marshes within the State, especially in the mountains, as he met with it on the head-waters of the Mohave River as late as the 7th of June."[1] Hence it is possible that Lower California lies nearly in the direct path of one of its regular lines of migration.

Puffinus opisthomelas Coues.

BLACK-VENTED SHEARWATER.

Puffinus opisthomelas Coues, Proc. Acad. Nat. Sci. Phila., 1864, 139–141 (orig. descr.; types from Cape St. Lucas). Elliot, Illustr. New and Unfig. N. Amer. Birds, II. 1869, introd. (descr.; figures head of specimen from Cape St. Lucas).

P.[uffinus] opisthomelas Coues, *Loc. cit.*, 144 (descr.; Cape St. Lucas).

Puffinus gavia (not *Procellaria gavia* Forster) Bryant, Proc. Calif., Acad. Sci., 2d ser., II. 1889, 87 (Cape St. Lucas).

"A large number of medium-sized, white-breasted and dark-backed Shearwaters," seen by Mr. Frazar between the islands of Carmen and Montserrat on March 6, and a few off the northern end of Espiritu Santo Island on March 18,

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer. II. 1884, 321.

probably belonged to this species, but they were so shy and restless that no specimens could be obtained. Dr. Coues, in connection with his original description of *P. opisthomelas*, states that "two fine examples are contained in the Smithsonian Museum, both collected by Mr. John Xantus at Cape St. Lucas, Lower California (Smiths. Catalogue, Nos. 16,990, 16,991)," but Mr. Ridgway writes me that the only specimens now in the National collection from Lower California are "as follows: No. 16,990, ♀ ad., Cape St. Lucas, '1859–'61' (no further data); type. — No. 31,964, San Nicolas; J. G. Cooper, no date."

Until recently the Black-vented Shearwater has been considered a very rare bird, and almost nothing has been definitely known about its habits or distribution, but during the past decade Mr. Loomis [1] has found a Puffinus which he refers to *opisthomelas* (although "all the specimens obtained differ considerably from the type") off the coast of California, near Monterey, where he has noted its appearance sparingly in August, abundantly in September, by "thousands" in December and early January. As most of the birds seen in December and January were flying southward, Mr. Loomis inferred very naturally that they were "migrating to a breeding habitat further south," and that "while their destination may have been north of the equator, it seems highly probable that they did not stop short of the Southern Hemisphere." Mr. Anthony, however, has since reported [2] that in May, 1892, he found *Puffinus opisthomelas* in large numbers, and evidently breeding, on Guadaloupe Island, only "about 220 miles south of San Diego, and about 65 miles from the nearest mainland, Punta Baja, on the Peninsula" of Lower California. The nests, being placed either under huge blocks of lava, or in rocky crevices, often in the vertical walls of high cliffs fronting the water, were all inaccessible, but several of the birds were caught in steel traps placed at the entrances to their holes and dissection of these and other specimens convinced Mr. Anthony that they "had at that time well grown young." In the interesting article from which the above quotations are taken, Mr. Anthony says that "Major Chas. E. Bendire writes me that there are four eggs of this species in the National Museum collection, collected in 1873 on Santa Barbara Island by Capt. C. M. Scammon." He also states that he has found *Puffinus opisthomelas* "not uncommon on several occasions off the Columbia River during the summer months and in November and January," and that "on one occasion I met with a flock on the coast of Lower California that I estimated contained not less than 50,000" birds. Still more recently Mr. Anthony has published [3] the following additional and highly interesting facts relating to the breeding distribution and habits of the Black-vented Shearwater: —

[1] Proc. Calif. Acad. Sci., 2d ser., V. 1895, 216; VI. 1896, 2, 27; 3d ser., II. 1900, 320.

[2] Auk, XIII. 1896, 223–228.

[3] Auk, XVII. 1900, 248, 249.

"On the San Benito Islands, lying between Guadaloupe and Cerros Islands, I have also found a few *P. opisthomelas* nesting. So far as I have been able to discover, there are no burrows on these islands, all the nests being in small caves, which are nearly filled with deposits of guano left by untold generations of *Puffinus*. The caves are all small and the nests inaccessible, but I think that each cave was inhabited by several pairs of birds, judging by the outcry and warning hisses that greeted my approach to the entrance.

"About thirty-five miles south of San Benito Islands lies Natividad Island, a lower and more sandy island than those previously mentioned — a condition which seems to suit the requirements of the Black-vented Shearwaters to a nicety, for here are found thousands of them, nesting the full length of the island, some three miles in extent. With the exception of a few rocky slopes and ridges the entire island may be said to be one almost continuous colony. This island I first visited in August, 1896. The size of the burrows at once attracted my attention, and a closer examination revealed the unmistakable tracks of a *Puffinus*. Though the footprints were abundant and fresh, proving that the burrows were still visited at night, all of those examined were unoccupied. I again called at Natividad April 10, 1897, and found the breeding season at its height, each burrow containing either a pair of Shearwaters or one Shearwater and a fresh egg. In no case, I think, did I find an egg in a burrow with two birds. The burrows were usually about ten feet in length, seldom if ever straight, but with one or two sudden turns to the right or left, the nest sometimes being but two feet from the entrance though at the end of a ten foot burrow. Few of the nests were over eighteen inches below the surface, the burrows being for the most part nearly horizontal, and the loose nature of the soil made walking anything but a pleasure, as one constantly broke through into tunnels, the exact location of which it was impossible to determine. . . .

"There was little attempt at nest-building, the eggs for the most part being laid in a depression in the sand at the end of the burrow. In a few cases a number of small twigs and sticks had been placed in the hollow forming a very crude nest. Before the egg is deposited the burrow is occupied by both birds, and I have found them on the nest at least a month before any eggs were laid. Just how early they take to the burrows I am unable to say, not having visited the nesting colony earlier than the first week in March, when all the burrows were occupied.

"I have never heard any love notes from this species when in the burrows. Their outcry at night, however, when they emerge from their nests and fly about over the island, is something unique in my experience. The noise is a series of choking cries coupled with a hissing, like escaping steam, the same that I have at times heard them utter when disturbed in their burrows."

Puffinus auricularis C. H. Townsend.

Townsend's Shearwater.

Puffinus auricularis Anthony, Auk, XV. 1898, 38 (Cape St. Lucas); XVII. 1900, 249–252 (Cape St. Lucas; nesting habits on San Benedicto Island).

This species, discovered[1] at Clarion Island by Mr. Townsend in March, 1889, was found in the waters of the Cape Region some eight years later by

[1] Proc. U. S. Nat. Mus., XIII. 1890, 133, 134.

Mr. Anthony, who has given us the following brief but definite account of its breeding habits: —

"About Cape St. Lucas Townsend's Shearwater (*Puffinus auricularis*) is rather common, and though perfectly distinct specifically it is quite closely related to *P. opisthomelas* and has a similar breeding season. On San Benedicto Island I found a few nesting the last week in May. At this date most of the young were but a few days old, covered with sooty down above, and paler-grayish below. With the smaller young I often found one of the parents, but they were as frequently alone. The burrows were all confined to the higher parts of the island — about 500 feet above the sea, where they were dug among the bunches of thick, tangled grass, and were well scattered, a dozen or so being a large colony. The burrows were not so deep or long as were those of *P. opisthomelas* on Natividad, averaging about five feet in length. On Clarion Island this species was again found in a similar location, all of the burrows being confined to a thick growth of grass, on the high parts of the island.

"The Clarion colonies were more extensive, each suitable patch of grass being well populated. Few birds were seen at sea during the daytime and at night, those that visited the nests must have been much more silent than is the Black-vented Shearwater, in the vicinity of its colonies, for I do not remember hearing any notes that I could attribute to *P. auricularis* though one or two of those that were dragged from their nests gave vent to their displeasure in notes similar to those of *P. opisthomelas*."

Puffinus griseus (Gmel.).

Dark-bodied Shearwater.

Nectris amaurosoma Coues, Proc. Acad. Nat. Sci. Phila., 1864, 124, 125 (orig. descr.; type from Cape St. Lucas; crit.).

N.[ectris] amaurosoma Coues, *Loc. cit.*, 143 (descr.).

Puffinus griseus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape St. Lucas). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 252 (Cape St. Lucas).

The specimen[1] obtained by Mr. Xantus at Cape St. Lucas on August 18, 1860, remains the only example known to have been taken in the waters of the Cape Region, where, however, the bird must occur commonly, at least during migration, for Mr. Loomis has ascertained[2] that it is a regular and at times abundant visitor to the coast of California in the neighborhood of Monterey, from June to December.

It is believed to breed only in the Southern Hemisphere, where in the neighborhood of Stewart's Island and along the adjacent coast of New Zealand "it burrows in peaty ground a horizontal hole, from three to four feet deep, and turning slightly to the right or left. At the end of this hole it forms a rude

[1] Type of *Nectris amaurosoma* Coues.

[2] Proc. Calif. Acad. Sci., 2d ser., V. 1895, 217; VI. 1896, 27, 28; 3d ser., II. 1900, 320.

nest of twigs and dead leaves. Only one egg is laid, and the male is said to assist in incubation; and the parent birds are very savage while on the nest, biting and scratching those who molest them. The old birds roost on the shore, and the noise they make during the whole night is described as being something absolutely frightful."[1]

Puffinus cuneatus Salvin.

Wedge-tailed Shearwater.

Puffinus cuneatus Anthony, Auk, XV. 1898, 38, 39 (Cape St. Lucas); XVII. 1900, 250–252, pl. 8 (Cape St. Lucas; nesting habits on San Benedicto Island, with figure of nesting site).

This Shearwater, previously "known only from the Bonin Islands south of Japan, Krusenstern Island, and the Hawaiian Islands," was also added to the fauna of Lower California by Mr. Anthony, who states that

"About Cape St. Lucas, and between that point and the Revillagigedo Islands, the Wedge-tailed Shearwater (*Puffinus cuneatus*) is found in abundance in May and June. It probably may occur at other seasons, but as I have not visited the region of the Cape during other seasons I can give no assurance of its doing so. This species is of exceptional interest, as it belongs to a group of Shearwaters new to the North American fauna, and of which little is known. I was so fortunate as to discover a large colony nesting on San Benedicto Island, from which was obtained a fine series of skins with all of the intergrades between the white-bellied phase of '*cuneatus*' and the dusky form described by L. Stejneger from the Sandwich Islands as *knudseni*.

"On first landing on San Benedicto, the first of May, I heard a low murmuring noise which seemed to come from the opposite side of the island. Thinking it might come from a rookery of seals, I started out to investigate, but soon found that I was getting no nearer the source of the noise, which possessed a ventriloquial power difficult to locate. I soon, however, found myself surrounded by large burrows which fairly honeycombed the entire south end of the island, which was so completely undermined that one constantly broke through into burrows, frequently sinking to the hips in ground that had every appearance of being solid. . . .

"From many of the holes came moans and sobs in soft low tones, inexpressively sad and weird, — the love notes of *Puffinus cuneatus*.

"A number of the burrows were opened, and from each were taken two birds, which fought and bit most savagely on being dragged to the light. By far the greater number were in dark plumage, but many showed lighter underparts, and in some cases a perfectly typical '*cuneatus*,' with pure white underparts, was found in the same burrow with a dark '*knudseni*.'

"At this date the burrows were about four to five feet in length, most of them running in a nearly horizontal direction along the sides of the steep narrow ravines that everywhere cut this end of the island.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 392.

"The soil is chiefly of fine pumice, in some places soft and easily excavated, but in others so hard as to require the use of a pick in opening the burrows. In most of the excavations was a rude attempt at nest building, consisting of a few sprigs of green grass and other vegetation which grew about the colony, and on this meagre platform were both birds, but no eggs. Nor did the condition of the birds indicate that the actual nesting season was at hand. About sunset the birds from the island began to seek the water, meeting a similar tide moving in from the sea. They mostly centred about the south end of the island, which soon presented the appearance of a vast beehive. Thousands upon thousands of Shearwaters were circling about with easy flight much more airy and graceful than that of any Shearwater with which I am familiar; especially was the difference accentuated when an occasional *auricularis* with typical Shearwater flight, skimmed through the throng. The greater part of those birds which came from the higher parts of the island descended at an angle of about 45°, with wings set until near the water, when they sailed off over the waves until lost to view, while others descending in a spiral course joined their fellows in circling about the water at the foot of the cliffs. There was little, if any, outcry, though the sobbing notes were often heard from the birds on shore. . . .

"Thinking I would find eggs, I returned to San Benedicto from Socorro Island two weeks later, but was disappointed. Many of the burrows were empty, and all had been extended two feet or more in length, and the nest of green plants moved back to the end. As before, when birds were found there were usually two."

Halocyptena microsoma Coues.

Least Petrel.

Halocyptena microsoma Coues, Proc. Acad. Nat. Sci. Phila., 1864, 79 (orig. descr.; type from San José del Cabo). Elliot, Illustr. New and Unfig. N. Amer. Birds, II. 1869, pl. 61 (descr. and figures type specimen from San José del Cabo). Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo); VI. 1883, 158, footnote (crit.; s. Lower Calif.). Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 402 (figures head, leg, and tail; near San José del Cabo). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 252 (San José del Cabo).

The type of this peculiar little species, an adult female taken by Mr. Xantus in May, 1861, near San José del Cabo, remained unique until March, 1888, when a second example flew on board the United States Fish Commission Steamer "Albatross" in Panama Bay, and was secured by Mr. Townsend.[1] Although the Xantus specimen appears to be the only one which has been thus far taken in the immediate neighborhood of Cape St. Lucas, the bird must occur there more or less regularly and commonly at times, for Mr. Anthony states that[2]

"In early June I have found the Least Petrel migrating along the coast of Lower California in company with the Socorro and Black Petrels, and in late July

[1] Proc. U. S. Nat. Mus., XIII. 1890, 141.

[2] Auk, XV. 1898, 142.

have found them nesting on the small rocky San Benito Island, fifty miles off the coast of the peninsula. So far I have never found the Least Petrel nesting in burrows. They have always been taken from the crevices in rocky ledges or among the loose stones. The pearly white egg is laid on the bare rock. Usually several are found within a few feet if desirable crevices are numerous. Young were taken as late as September 7 or 8 that were but a few days old. They were like the young of the three species of *Oceanodroma* I have mentioned, except for size. All are covered with sooty or slaty black down, through which the feathers appear when the bird is nearly or quite fully grown."

The passage just quoted contains practically all that is known at present respecting the breeding habits, as well as the general distribution, of the Least Petrel. An egg in my collection, taken by Mr. Anthony at San Benito Island, Lower California, July 26, 1896, is dead white without gloss or obvious markings. It is ovate in shape, and measures 1.03 × .74.

Oceanodroma melania (Bonap.).

Black Petrel.

Thalassidroma melania Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 306 (Cape St. Lucas).

Cymochorea melania Coues ex Bonap., *Ibid.*, 1864, 76, 77 (descr. Cape St. Lucas specimen; crit.). Elliot, Illustr. New and Unfig. N. Amer. Birds, II. 1869, pl. 61 (descr. and figures specimen from Cape St. Lucas).

Cymochorea melaena Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape St. Lucas).

Oceanodroma melania Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 253 (Cape Region).

Oceanodroma townsendi Ridgway, Proc. U. S. Nat. Mus., XVI. 1893, 687, 688 (orig. descr.; type from Cape St. Lucas).

Without doubt the Black Petrel, also, is a regular visitor to the waters immediately about Cape St. Lucas, although the specimen obtained there by Mr. Xantus over forty years ago is, I believe, the only one known to have been taken in that immediate neighborhood. In 1889, however, additional examples were collected near Guaymas by Mr. Townsend, and during the past fifteen years Mr. Anthony has apparently met with many others at various points to the northward of the Cape along both coasts of the Peninsula as well as, on one occasion, only about forty miles to the westward of San Diego, California.[1] From what the observer last-named has put on record it may be inferred that the bird is of regular and by no means uncommon occurrence, especially off the Pacific coast of Lower California. According to Professor Baird a specimen was obtained near San Francisco by Mr. Gruber at some time previous to 1859, and Dr. Cooper includes the species in a list of birds

[1] Auk, XI. 1894, 321, 322.

which he and others have met with at the Santa Barbara Islands,[1] where it was also seen by Mr. Grinnell in "the spring of '97."[2]

On July 10, 1896, Mr. Anthony found some Black and Socorro Petrels breeding together on one of the Coronado Islands (in the Gulf of California), but although the two fresh eggs (taken with the parent birds) of the former species which he obtained on this occasion were new to science, his description of them is limited to the remark that, like all those which he has "subsequently handled," they "were unmarked." His account[3] of this colony is so involved and so obscurely worded as to leave the reader in doubt as to which of the two species just mentioned many of the passages relate. Apparently only a few of the birds were positively identified, owing partly to their nocturnal habits, partly to the fact that most of their nests were in holes "under very large boulders or in cracks in the ledges," where it was impossible to get at them. Mr. Anthony states definitely, however, that the Black Petrel is an exceptionally late breeder, and that he has found it "incubating as late as September 8." He also says that it makes little attempt at nest-building, "though a few sticks are often dragged into the burrow with an evident desire to construct something resembling a nest." He makes no mention in this article of having found the Black Petrel breeding elsewhere than on Coronado Island, but I have an egg which was taken by him on San Benito Island, off the Pacific coast of the Peninsula, on July 26, 1896. In shape it is elliptical ovate, in color dead white, without markings or gloss. It measures 1.38 × 1.04.

At a meeting of the A. O. U. Committee on Nomenclature, held in Washington in 1895, Mr. Ridgway stated that he had sent specimens of his *Oceanodroma townsendi* to Mr. Salvin, who, on comparing them with the type of *O. melania* in the Paris Museum, failed to find any differences by which the two could be distinguished.

Phaëthon aethereus Linn.

Red-billed Tropic Bird.

Phaëthon aethereus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region; Espiritu Santo Islands). Anthony, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 86 (lat. of Cape St. Lucas). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 253 (Espiritu Santo Island).

Mr. Anthony asserts that the Red-billed Tropic Bird "has been regularly met with" in the latitude of Cape St. Lucas and occasionally further north. A specimen was obtained by Mr. Belding at Espiritu Santo Island on February 1, 1882, and a single bird which probably belonged to this species was

[1] Auk, IV. 1887, 87.
[2] Pub. II. Pasadena Acad. Sci., 1898, 9.
[3] Auk, XV. 1898, 140–144.

seen by Mr. Frazar near Montserrat Island on March 4, 1887. In view of all this and of the fact that *P. aethereus* is known to breed in some numbers on San Pedro Martir Island, "a rock about one and a half miles long, nearly as broad, and 1045 feet in height,"[1] situated in the Gulf of California, a little north of latitude 28° and about midway between Lower California and the mainland of Mexico, we may assume that the bird occurs regularly and not infrequently in the waters immediately about the Cape Region proper, although this does not seem to have been as yet definitely established. Of the San Pedro Martir colony Colonel Goss has given us the following interesting account: —

"The birds breed in holes and crevices on the sides of the steep cliffs that often overhang the water; many were inaccessible. I was therefore able to reach and examine but few of their nesting places. These were without material of any kind for a nest; the egg (for they lay but one) was upon the bare rock. In nearly all, however, I found a young bird, about half grown; from this I think the birds begin to lay as early as the middle of February. With the aid of the Indians, who are expert climbers, I was only able to procure and save seven of their eggs. The ground color is dull grayish white, rather finely and evenly sprinkled with deep claret brown, generally thickest at large end, the specks running largely together, giving the eggs a clouded or marbled look. In form they are ovate. Measurements of the same, 2.31 × 1.71, 2.40 × 1.72, 2.40 × 1.78, 2.26 × 1.71, 249 × 1.81, 2.40 × 1.69, 2.38 × 1.68. When approached the birds within their homes do not attempt to leave, but vigorously defend the same, striking and biting with their strong, pointed, sharp-edged, jagged bills, lacerating the ungloved hand that dares intrude, uttering at the same time a loud, harsh, rapid *che-che-che-che-che-che-che*, — notes of defiance, and often heard in their rival flights. The birds are very beautiful, and cannot fail to attract attention, especially when in the air, by the peculiar rapid stroke of their wings and graceful waving motion of their long whip-like tails."[2]

The Red-billed Tropic Bird has been seen by Mr. Bryant as far north on the Pacific coast of the Peninsula as Cape Colnett (about latitude 31° 15′), and a skull is said to have been found near San Francisco many years ago.[3]

Sula brewsteri Goss.

BREWSTER'S BOOBY.

Sula leucogastra (not *Pelecanus leucogaster* BODDAERT) BELDING, Proc. U. S. Nat. Mus., VI. 1883, 352 (near Pichalinque Bay).

Sula sula (not *Pelecanus sula* LINNAEUS) BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 253 (near Pichalinque Bay).

An immature Gannet taken near Pichalinque Bay in January, 1883, by Dr. H. Ten Kate, was recorded by Mr. Belding as an example of *Sula leucogastra*,

[1] Goss, Auk, V. 1888, 240.

[2] Goss, *Loc. cit.*, 244.

[3] Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 86, footnote.

and afterwards referred by Mr. Bryant to *S. sula*. I am informed by Mr. Ridgway, however, that the bird is really *S. brewsteri*, and that there is no valid record of the occurrence of either *S. leucogastra* or *S. sula* in Lower California.

Mr. Frazar met with *S. brewsteri* only once — at San José del Cabo, on September 10 — when several were seen flying past over the sea, and one, which came in over the sand-hills, was shot. This bird, although in worn plumage, is immature, the entire head and throat being grayish brown, and the underparts posterior to the breast mixed white and grayish brown.

Colonel Goss, by whom the species was first distinguished and named, found about seven hundred individuals breeding on San Pedro Martir Isle during the latter half of March, 1888, and gives the following description [1] of their nesting habits and eggs: —

"The birds were not wild, but their nesting places as a whole were not in as exposed situations as those of the Blue-footed; they seemed to prefer the shelves and niches on the sides of the rocks. They lay two eggs, and in all cases collect a few sticks, seaweed, and often old wing or tail-feathers; these are generally placed in a circle to fit the body, with a view, I think, to keep the eggs that lie upon the rock from rolling out. There is but little material on or about the isle out of which a nest can be made.

"The birds must commence laying as early as the 10th of February, for I found in many cases young birds from half to two thirds grown — white, downy little fellows with deep bluish black skins — that, in places where they can, wander about regardless of the nests where they were hatched. Average measurement of 17 sets of their eggs, 2.44 × 1.60. In color and form, as well as in size, they are similar to the eggs of the Blue-footed, in fact so near alike that when placed together they cannot be separated with any feeling of certainty; therefore in collecting I was careful to mark each set before they left my hands."

In 1889 Mr. Townsend obtained two specimens on the Georges Islands, where he found the species breeding in abundance.[2] It also nests on Benedicto and Socorro Islands.[3]

There can be little doubt that the Blue-footed Gannet (*S. nebouxii*), which breeds numerously on the islands of San Pedro Martir and Tiburon on the eastern side of the Gulf of California, visits the waters about the southern extremity of the Peninsula more or less frequently, but there is no present evidence to show that this is actually the case.

[1] Auk, V. 1888, 243.
[2] Proc. U. S. Nat. Mus., XIII. 1890, 138.
[3] Anthony, Osprey, III. 1898, 4–6.

Phalacrocorax dilophus albociliatus Ridgw.

Farallone Cormorant.

Graculus dilophus (not *Pelecanus* (*Carbo*) *dilophus* Swainson) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), ? 306 (Cape St. Lucas).

Phalacrocorax dilophus cincinnatus (not *Carbo cincinatus* Brandt) Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

P. [*halacrocorax*] *cincinnatus* (not *Carbo cincinatus* Brandt) Belding, *Loc. cit.*, 548 (La Paz).

Phalacrocorax dilophus albociliatus Ridgway, Proc. Biol. Soc. Wash., II. 1884, 94, 95 (orig. descr.; coast of California to Cape St. Lucas and W. Mexico). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 253–257 (Cape St. Lucas and elsewhere in Cape Region; feeding and nesting habits).

Mr. Belding characterizes this Cormorant (under the name *P. cincinnatus*) as "very common at La Paz in the winter months; rare in March." Mr. Frazar took a male in adult plumage, but without the nuptial plumes, at Carmen Island, on March 6. On March 15 he found about a dozen pairs breeding on a round, high rock, of an acre or less in extent, near San José Island. The nests, which were built on dead cactuses, contained young birds nearly full grown. Mr. Bryant says:—

"The numbers of these birds which congregate at Magdalena Bay is almost incredible. Many mornings I have been attracted by the noise of thousands fishing some distance off shore and have watched through a glass the dense, dark mass as they passed a given point. Those half a mile or more in the rear came flying forward in platoons and alighted at the head of the broad line, making the water turbulent with commotion while their numbers were being constantly augmented by the arrival of stragglers from the sides and rear. Mingled with the myriads of cormorants were often many California brown pelicans plunging for fish, while above all hovered Heermann's gulls, robbing at every opportunity. To all appearances, they were following a great school of fish, astounding numbers of which must be daily consumed by these voracious feeders. . . .

"Cormorants were seen along the *estero* to San Jorge, and in April, 1889, on the lagoons in lower Purisima cañon, but no nesting colonies were found except on Santa Margarita Island. On that island they built upon mangrove bushes bordering a small lagoon. . . .

"Many of the cormorant's nests, in fact all of those first constructed, were upon the same mangroves as were used by the frigate pelicans, but only the highest branches were appropriated by the cormorants. . . .

"When I first visited this colony (January 14, 1888,) a few of the nests contained eggs, and scores of others were in varying stages of construction. The great rush of cormorants to Santa Margarita Island did not occur until April or latter part of March. . . .

"Some of the nests contained fresh eggs as early as January 14, and I was told they had been taken by the people for food two weeks before."

Phalacrocorax penicillatus (Brandt).

Brandt's Cormorant.

Phalacrocorax penicillatus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 257 (Cape Region).

Mr. Belding states that Brandt's Cormorant was "abundant" at San José del Cabo in April and May, 1882. It also receives nominal mention in his list of species "common to most or all of the localities where collections were made." Mr. Frazar does not refer to it in his field notes, but his collection includes five young birds in the brown plumage taken at La Paz in January.

To the northward of the Cape Region the species has been met with by Mr. Belding at Coronados and Cerros Islands, and at "several intervening points," while Mr. Bryant has found it "at Magdalena Bay and for many miles up the *estero*." Its general range extends from Cape St. Lucas to Washington. It breeds abundantly on the Santa Barbara and Farallon Islands.

Phalacrocorax pelagicus resplendens (Aud.).

Baird's Cormorant.

[*Phalacrocorax pelagicus*] c. *resplendens* Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 160 (Cape St. Lucas).

P.[*halacrocorax*] *pelagicus resplendens* Ridgway, Man. N. Amer. Birds, 1887, 80 (Cape St. Lucas).

Phalacrocorax pelagicus resplendens A. O. U., Check List, 1895, 44, 45, no. 123 b (Cape St. Lucas).

Phalacrocorax pelagicus Salvin and Godman, Biol. Centr.-Amer. Aves, III. 1901, 152, part (crit.; Cape St. Lucas).

According to Baird, Brewer, and Ridgway's Water Birds, Ridgway's Manual, and the A. O. U. Check List, this form ranges from Washington to Cape St. Lucas and Mazatlan on the western coast of Mexico. I can find no more definite evidence of its occurrence in the waters of the Cape Region, but Mr. Bryant states [1] that it has been "seen near Todos Santos Islands [off the northwestern coast of the Peninsula] upon one occasion in May by Mr. Anthony."

Pelecanus erythrorhynchos Gmel.

American White Pelican.

Pelecanus erythrorhynchus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo; Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 352 (La Paz).

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 257.

Pelecanus erythrorhynchos Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 257 (San José del Cabo; Cape St. Lucas; La Paz).

The White Pelican apparently visits the Cape Region only in winter, and then in but small numbers. According to Mr. Ridgway it was found by Mr. Xantus at Cape St. Lucas (date not recorded); and in January and February at San José del Cabo, where Mr. Frazar also saw a flock of about thirty on November 11, 1887. Mr. Belding met with it only once, at La Paz on February 17, 1883, when two were observed. Mr. Frazar says that the people at San José del Cabo are all familiar with the bird, but consider it of rare occurrence. Mr. Bryant's only record is of a flock seen "a little more than one hundred miles northward from Magdalena, on the Pacific Coast." Dr. Cooper mentions the species as "common on the coast of California in winter, though few reach San Diego." It was "occasionally seen in large flocks on Rio Mazatlan, in Western Mexico," by Colonel Grayson, and on the "west coast of Central America" by Mr. Salvin.[1] Hence it sometimes passes well to the southward of Cape St. Lucas.

Pelecanus californicus Ridgw.

California Brown Pelican.

Pelecanus fuscus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (mortality at Cape St. Lucas and San José; descr.), 548 (San José). Ridgway, *Ibid.*, 545, footnote (crit.).

Pelecanus californicus Anthony, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 83–85 (descr. nest, eggs and habits on San Martin Island). Bryant, *Ibid.*, 257–260 (Cape Region; feeding habits at Magdalena Bay).

Seven specimens of the California Brown Pelican, collected by Mr. Frazar at La Paz on January 28, confirm most satisfactorily the characters proposed by Mr. Ridgway for *P. californicus*, at least as far as the relationship of this form with *P. fuscus* is concerned. The most striking points of distinction between the two species are the larger size of *californicus* and the peculiar coloring of its nape. This with adult birds in perfect nuptial condition is so very dark brown as to look perfectly black in most lights, there being no appreciable tinge of chestnut except on a short space just back of the occiput. The nape of *fuscus* is much lighter and redder, varying in color from chestnut to rich seal brown, which is never sufficiently dark to be mistaken for black. The white-necked winter adults and plain brown young of *californicus* appear to be colored exactly like those of *fuscus*, but the two species may be easily separated by size provided care is taken to compare birds of the same sex, the males of both being considerably larger than the females and the male of *fuscus* sometimes quite as large as the female of *californicus*. The color of the pouch is always lighter in dried skins of *californicus* than in those of *fuscus*, but with freshly

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 136.

killed specimens of the former it is subject to much variation, as the following notes by Mr. Frazar relating to the seven birds just mentioned will show: —

Color of Pouch.

Females in full nuptial plumage with black napes.

No. 1. "Anterior half of pouch very dark olive green; posterior half flesh colored."

No. 2. "Anterior half dark olive green shaded with yellow along fold; posterior half light yellowish flesh color tinged with reddish at base."

No. 4. "Anterior two thirds very dark olive green; posterior third flesh color tinged, especially along borders of feathered tracts, with red."

Adult (?) females with white necks.

No. 3. "Anterior two thirds dark olive green; posterior one third red."

No. 5. "Anterior half olive green; posterior half bright red."

Male in full nuptial plumage.

No. 6. "Anterior half dark greenish olive; posterior half chou-chou yellow."

Young in plain brown plumage.

No. 7. "Entire pouch flesh colored. Feet dark. Iris white flecked with gray."

This Pelican is common about La Paz in winter, and both Mr. Belding and Mr. Frazar found it also at San José del Cabo, the former on May 17, 1882, the latter in October, 1887. According to Mr. Frazar's notes it "breeds in March," just where he does not state, but Mr. Bryant[1] "was told that they lay on the southern end of Santa Margarita Island." Mr. Anthony found a colony of about five hundred breeding on San Martin Island, and "according to Mr. A. M. Ingersoll they nest also on Los Coronados Islands" (Bryant). In the lagoon at San José del Cabo Mr. Frazar found one of these birds in a singular dilemma. "The upper mandible had been shut inside the lower, and the bones of the latter had closed over the former so firmly that the poor bird could not open its bill." It was so feeble from starvation that Mr. Frazar caught it, not without difficulty, and at some risk of breaking the mandibles pulled them apart by main force and set the bird free. "It was laughable to see it snap its bill repeatedly as it flew off, evidently not less surprised than relieved to find that it could open and shut it again."

The California Brown Pelican occurs more or less commonly along the Pacific coast as far northward as Gray's Harbor, Washington.[2] It has also been taken at Burrard Inlet, which Mr. Fannin thinks may be the extreme northern limit of its range.[3]

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 259.

[2] Hubbard, Zoe, III. 1892, 142.

[3] Check List Birds British Columbia, 1891, 8.

Fregata aquila Linn.

Man-o'-War Bird. Frigate Bird.

Tachypetes aquila Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 548 (San José).

Fregata aquila Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 260–265 (Cape Region; descr. nest, eggs, habits, and color of fleshy parts at San Margarita Island).

The Frigate Bird is common in winter at La Paz, and in 1882 it was found by Mr. Belding at San José del Cabo as late as May 17. Mr. Frazar notes its "arrival" in autumn on September 9, at the latter locality, and on the 15th of March preceding records finding about fifty birds on a small island to the north of La Paz," roosting on some cactuses," where they perhaps nested, also, later in the season. Mr. Bryant saw Frigate Birds along the *estero* north of Magdalena Bay, and "at the lagoon in lower Purisima cañon," but most numerously on Santa Margarita Island, where there was a large breeding colony, of which he gives the following interesting description: —

"Going over to Santa Margarita Island from Magdalena Island on January 14, 1888, I saw many of these birds on the wing, some of them idly floating at an immense height, so high as to be almost invisible, higher than I have ever seen hawks (*Buteo*) sailing. Anchoring near shore, we waited until morning before landing. From the boat, the mangroves spoken of under the subject of cormorants, could be seen fairly covered with birds and a long whirling column of others on the wing extended far skyward. Birds were continually coming and going from this place, but none passed within gun-shot of the boat, and during my excursions by boat, more than five hundred miles in all, no man-o'-war bird came near enough for a shot. . . .

"The birds were more quiet after dark, but some sounds could be heard throughout the entire night. At the first faint appearance of dawn, a continuous exodus would commence from the rookery, some of the birds flying high over the island more than four miles to the sea. The mangroves bordering upon the western side only of the lagoon were used for nesting sites, a partial vacancy midway seemed to separate two colonies. The mangroves being higher at the edge of the water, the nests were placed at heights varying from five to twelve feet. Procuring a small boat and the services of a Mexican, I skirted the edge of the lagoon for specimens of eggs and photographs of the rookery, showing the birds in all attitudes. They were usually quite tame but seemed more afraid of me when in the boat than when climbing over and through the mangroves, probably because in the first instance I was more exposed to view. Several birds were caught by hand and some others struck down with an oar as they pitched from the nest to fly past. Upon the water they beat their wings helplessly and were with great difficulty able to rise. In a few cases a bird would miss getting on the wing by coming in contact with another and fall helplessly amongst the branches from which they were scarcely able to extricate themselves. They seemed bewildered by my pres-

ence, and did not attempt any resistance. Those which were taken alive were not given an opportunity to use their beaks if they had been so disposed. . . .

"Eggs were collected for food by the Mexicans during the latter part of December, and owing to repeatedly taking them, some were found February 13, 1888, which were in different degrees of incubation, others were quite fresh. The Mexicans had fresh eggs April 27 which they had recently taken.

"The first young were seen in the middle of February; they had been hatched sometime earlier, for although some were nearly naked, others had a full covering of snowy down and the dark scapular pin feathers."

Mr. Grinnell states[1] that the Man-o'-War Bird is "of not infrequent occurrence" along the coast of Los Angeles county, California, in winter, and Mr. T. S. Palmer has recorded[2] the capture of a female at Humboldt Bay on October 5, 1888.

Merganser serrator (Linn.).

Red-breasted Merganser.

Mergus serrator Belding, Proc. U. S. Nat. Mus., VI. 1883, 352 (La Paz).

The Red-breasted Merganser is "common at La Paz in winter" according to Mr. Belding, who seems to have been the first and, indeed, thus far the only observer who has met with it in the Cape Region. Mr. Bryant apparently overlooked the record just quoted, but says[3] that he himself found the birds "tolerably common during March," and also saw some in April in the long *estero* north of Magdalena Bay, adding that "Mr. Belding tells me that he saw a number in San Quintin Bay in May, 1881, and shot one specimen." Further northward, in California, this Merganser is a regular and very common winter bird. There is, I believe, no record of its occurrence south of Lower California.

Lophodytes cucullatus (Linn.).

Hooded Merganser.

Lophodytes cucullatus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo). Belding, *Ibid.*, VI. 1883, 352 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 265 (San José del Cabo; La Paz).

The Hooded Merganser is said by Mr. Ridgway to have been taken at San José del Cabo by Mr. Xantus, in February, and it is given as "rare" south of latitude 24° 30′ by Mr. Belding. Mr. Frazar did not meet with it, and Mr. Bryant gives no record for the central or upper portions of the Peninsula, al-

[1] Pub. II. Pasadena Acad. Sci., 1898, 10.
[2] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 88.
[3] *Ibid.*, 265.

though "Dr. Cooper found it common . . . along the whole Pacific coast" to the northward of Lower California.[1] The southern limits of its range in winter appear to coincide rather closely with those of the Red-breasted Merganser.

Anas boschas Linn.

Mallard.

Anas boscas Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo). Belding, *Ibid.*, VI. 1883, 352 (s. of lat. 24° 30′).

Anas boschas Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 265 (San José del Cabo; Cape Region).

The Mallard, also, was obtained in winter at San José del Cabo by Mr. Xantus, and it was "shot at several localities" south of latitude 24° 30′, by Mr. Belding, who, according to Mr. Bryant, has found it breeding in the San Rafael Valley. Mr. Anthony states that "quite a number were nesting in the large meadows on the top of the mountain" San Pedro Martir, in May, 1893.[2] Mr. Bryant does not appear to have personally met with the bird in Lower California, nor was Mr. Frazar more fortunate, from which it seems safe to conclude that it is not a common or at least generally distributed species on the Peninsula. This must be due to conditions other than those of latitude, for on the mainland it occurs numerously throughout Mexico and, indeed, ranges as far southward as Panama.

Chaulelasmus streperus (Linn.).

Gadwall.

Chaulelasmus streperus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo). Belding, *Ibid.*, VI. 1883, 351 (La Paz and s.).

Anas strepera Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 265 (San José del Cabo).

Mr. Xantus found the Gadwall at San José del Cabo in January and February, and Mr. Belding records it as "very common" in winter and early spring near La Paz and to the southward. Mr. Frazar found it "abundant" at San José del Cabo in the autumn of 1887, and notes its arrival on September 27, its increase in numbers up to October 11, and its somewhat diminished numbers on October 26. He makes no mention of its occurrence in November. No specimens are included in his collection.

Colonel Grayson found[3] the Gadwall "abundant from November until late in the spring in the neighborhood of Mazatlan," on the west coast of Mexico. It breeds as far south as San Pedro, California, according to Dr. Cooper.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 122.

[2] Zoe, IV. 1893, 230.

[3] Baird, Brewer, Ridgway, Water Birds N. Amer., I. 1884, 508.

Mareca americana (Gmel.).

Baldpate. American Widgeon.

Mareca americana Belding, Proc. U. S Nat. Mus., V. 1883, 548 (San José).
Anas americana Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 265 (San José del Cabo).

The only occasion, apparently, on which Mr. Belding met with the American Widgeon was May 17, 1882, when a flock of about twelve were seen at San José del Cabo. At this place, however, Mr. Frazar found the bird common in the autumn of 1887. It was first seen on October 22; after this its numbers steadily increased until by November 9 it was "more numerous than any other species except the Lesser Scaup Duck." The only spring records which I find among Mr. Frazar's notes are of a flock seen on March 6, near San José Island, and of a pair killed on April 1, at Triunfo. Mr. Bryant records a flock of eight "seen in the creek at Comondu," on March 9, 1888; a few others "found at San Juan, on the Gulf side near Loreto some days later," and still others "met with in 1889, at the water hole, San Raimundo."

The American Widgeon breeds chiefly to the northward of the United States, is one of the most abundant Ducks on the California coast in winter, and at the latter season goes at least as far south as Central America.

Nettion carolinensis (Gmel.).

Green-winged Teal.

Nettion carolinensis Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo). Belding, *Ibid.*, VI. 1883, 352 (s. of lat. 24° 30′).
Anas carolinensis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889. 265 (Cape Region).

The Green-winged Teal was observed at San José del Cabo in January and February by Mr. Xantus, and in September and the first half of October by Mr. Frazar, whose first specimen was taken on September 18. Mr. Belding found it moderately common south of latitude 24° 30′. Mr. Bryant apparently did not meet with it at all. It is known to be common in winter in California, and northward as far as Puget Sound, while southward it extends its migrations to Mexico and Central America. A few nest in the western United States, usually at high elevations, but by far the greater number spend the summer to the northward of our northern boundaries.

Querquedula discors (Linn.).

Blue-winged Teal.

Querquedula discors Belding, Proc. U. S. Nat. Mus., V. 1883, 548 (San José).
Anas discors Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 265 (San José del Cabo).

This Teal was not represented in the Xantus collection, and Mr. Frazar did not either obtain or definitely identify it, but Mr. Belding found it common and mated at San José del Cabo on May 17, 1882. According to Mr. Bryant a few were seen at San Ramon, in April, by Mr. Anthony.

The Blue-winged Teal has been taken only a few times in California, and still further northward it appears to be everywhere of uncommon if not rare occurrence on or near the Pacific coast, although it is said to breed sparingly in Alaska. It "was met with in Western Mexico near Mazatlan, by Colonel Grayson, in which region he speaks of it as being a very common species, a few remaining throughout the summer, and probably breeding there." [1]

Querquedula cyanoptera (Vieill.).

Cinnamon Teal.

Querquedula cyanoptera Belding, Proc. U. S. Nat. Mus., V. 1883, 548 (San José).
Anas cyanoptera Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (San José del Cabo).

Mr. Belding mentions the Red-breasted Teal as "rare" in his list of birds seen on May 17, at San José del Cabo, but all of the seven blue-winged birds taken at this place in autumn by Mr. Frazar prove to be *cyanoptera*. They were shot at various dates from August 29 to September 31. Teal supposed to be the same as those preserved were seen at San José del Cabo as late as November 9, but as immature autumnal specimens of *cyanoptera* are so very like those of *discors* that the two can be separated only by the most careful comparison of specimens in hand, it is by no means certain to which species the note last mentioned relates. Mr. Bryant saw a few Red-breasted Teal in Purisima Cañon, and states that many nest at San Rafael Valley, in the extreme northern part of the Peninsula. Mr. Anthony found several pairs breeding in the La Grulla meadows on San Pedro Martir, May, 1893.[2]

This Teal ranges along or near the Pacific coasts of North and South America, "from Puget Sound to Chili, and even, at certain seasons, to the Falkland Islands." [3] Its distribution in summer is not accurately known, but it is supposed to breed throughout much of the vast extent of territory just indicated.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 532.
[2] Zoe, IV. 1893, 230.
[3] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 536.

Spatula clypeata (Linn.).

Shoveller.

Spatula clypeata Belding, Proc. U. S. Nat. Mus., V. 1883, 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (San José del Cabo).

At San José del Cabo Mr. Frazar noted the arrival of the Shoveller on October 18, when one was killed from a flock of four. By October 24, it had become common. At the same place Mr. Belding found it in the spring of 1882 as late as May 17. Neither of the observers just mentioned speaks of its occurrence in winter. Mr. Frazar saw a single pair at La Paz on March 2, and others were observed at Comondu and lower Purisima Cañon in April, 1889, by Mr. Bryant.

The Shoveller is common in winter on the Pacific Coast from the mouth of the Columbia River to Mazatlan, and it has occurred as far south as Guatemala. It breeds rather numerously within the United States, but also migrates to high northern latitudes.

Dafila acuta (Linn.)

Pintail.

Dafila acuta Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo). Belding, *Ibid.*, VI. 1883, 352 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (Cape Region).

A single Pintail was shot by Mr. Frazar at San José del Cabo on August 29, and on September 2 a flock of about forty were seen. By September 20, they had become abundant. Mr. Ridgway states that Xantus found them in February, and Mr. Belding gives the species as "common" in his list of birds observed south of latitude 24° 30′ in the winter and early spring of 1882–83. Mr. Frazar's collection contains nine specimens. To the northward of La Paz "a few individuals were noticed April 5, 1889, at lower Purisima cañon," by Mr. Bryant; and about "a dozen, including both sexes, at San Rafael Valley, May 12," by Mr. Belding.

On the Pacific Coast the Pintail is said to winter from San Diego, California, almost to the Isthmus of Panama. It breeds numerously in the northern tier of western United States, and from thence northward.

Aythya americana (Eyt.).

Redhead.

Aethyia americana Belding, Proc. U. S. Nat. Mus., VI. 1883, 352 (La Paz).
Aythya americana Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (La Paz).

As the Redhead is not uncommon in winter along the coast of California, and as it has also occurred, at that season, at Mazatlan, on the west coast of Mexico,

it was of course to be expected in Lower California, but the only records for this region seem to be those of an adult male shot at La Paz February 12, 1883; a female seen at San Rafael on May 12, 1883, and a male at Trinidad on May 14, all by Mr. Belding.

The Redhead breeds at many places in the more northern United States, but most numerously in British North America, to the northern limits of the Fur Countries, it is said.

Aythya affinis (Eyt.).

Lesser Scaup Duck.

Fulix affinis Belding, Proc. U. S. Nat. Mus., VI. 1883, 352 (s. of lat. 24° 30′).
Aythya affinis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (Cape Region).

Mr. Belding records the Lesser Scaup as rare, but Mr. Frazar found it abundant at San José del Cabo, where it arrives early in November and remains through the winter. His collection contains three specimens. Mr. Bryant saw a number of small flocks "on Magdalena Bay and some distance along the *estero* in 1888," and in 1889 "shot specimens at lower Purisima cañon and at a water hole, San Raimundo." A few were also observed "on shallow inland water at Ensenada, December, 1885."

The Lesser Scaup Duck is not uncommon in winter in California, and it migrates as far southward as Mexico and Guatemala. It is believed to nest chiefly to the northward of the northern United States.

Aythya collaris (Donov.).

Ring-necked Duck.

Fulix collaris Belding, Proc. U. S. Nat. Mus., VI. 1883, 352 (s. of lat. 24° 30′).
Aythya collaris Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 266 (Cape Region).

The Ring-necked Duck is given by Mr. Belding as "rare" in winter and early spring south of latitude 24° 30′. I cannot find that any one else has reported it from Lower California. It was obtained at Mazatlan by Colonel Grayson, and is known to migrate as far south at least as Guatemala. It breeds to some extent in the northern United States, but chiefly further to the northward. It occurs regularly in winter on the coast of California, but not in any numbers.

Erismatura jamaicensis (Gmel.).

Ruddy Duck.

Erismatura rubida Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José del Cabo; Laguna de Santiago; Saint Lazaro Mts.). Belding, *Ibid.*, VI. 1883, 351 (La Paz and s.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 267 (La Paz).

Two adult females, taken at San José del Cabo in October, are somewhat peculiar in respect to the bill which, with both, is much narrower than in any

of my specimens from the eastern or central portions of North America. In all other respects they seem to agree perfectly with eastern birds of the same age and sex.

The Ruddy Duck appears to be resident in the Cape Region. It was found by Mr. Xantus at San José del Cabo in December and February, and at Laguna de Santiago, and in the Saint Lazaro Mountains in January. According to Mr. Belding it was "very common" in the "vicinity of La Paz, and southward" in the winter and early spring of 1882–83.

Mr. Frazar met with it first at San José del Cabo, where two were seen on October 18 and a few during the following week. At the time he naturally supposed these birds to be migrants from further north, as indeed they may have been, but on reaching Santiago early in November he found, in the lagoon already mentioned (in connection with the Short-winged Grebe), a large *breeding colony* of Ruddy Ducks, most of which were young of various sizes still following their mothers. Two specimens in his collection taken, on November 16, from a brood of five, cannot have been more than a few days from the egg when killed. The late date at which these young birds were found is somewhat difficult to explain, for in Mexico and Central America, where the species is said to breed numerously, the eggs are laid in May or June.[1] Mr. Frazar was told, however, that the lagoon at Santiago, which, at the time of his visit, was filled with water several feet in depth, dries up every few years, and this fact may have something to do with the unusual season at which the Ruddy Ducks and Short-winged Grebes were breeding there. The Ruddy Duck has been "found nesting at lat. 31° N. by Mr. Anthony" (Bryant), and Mr. Grinnell states that it breeds sparingly in Los Angeles county, California.[2]

Anser albifrons gambeli (Hartl.).

American White-fronted Goose.

Anser albifrons gambeli Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 267 (Los Martires).

The American White-fronted Goose is not mentioned in any of the earlier papers relating to the Cape Region, but Mr. Belding told Mr. Bryant "that a hunter (Mr. Fisher) shot one of a group of four at Los Martires, between La Paz and San José del Cabo" (Bryant).

"Mr. Grayson met with this species on the western coast of Mexico, near Mazatlan, where, from the month of September until February, it occurs in considerable flocks, appearing to migrate up and down the southern Gulf shores."[3] It is also abundant in winter in California. Its breeding grounds lie far to the northward of the United States.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., II. 1884, 106.

[2] Pub. II. Pasadena Acad. Sci., 1898, 12.

[3] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 452.

Guara alba (Linn.).

White Ibis.

Eudocimus albus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).
Guara alba Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268 (Cape Region).

Mr. Frazar notes the White Ibis as common about La Paz and at San José del Cabo, from whence it had been previously reported by Mr. Belding. It appears to be resident, and probably breeds in or near the Cape Region, although this has not been definitely ascertained.

Mr. Bryant found White Ibises "tolerably common at Magdalena Bay, associated in small flocks and making long flights in line from one feeding ground to another. At Santa Margarita Island and along the *estero* they were usually seen roosting upon the mangroves."

The White Ibis is a common bird in Mexico, Central America, and the northern portions of South America. I can find no records for the Pacific coast north of Lower California.

Plegadis guarauna (Linn.).

White-faced Glossy Ibis.

Plegadis guarauna Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268 (San José del Cabo); Zoe, II. 1891, 189, 190 (San José del Cabo).

At San José del Cabo Mr. Frazar found the White-faced Ibis regularly, in small numbers, during September, but none were met with there after October 1. At Santiago, however, a single bird was observed daily about the lagoon up to November 19. Mr. Belding saw a flock in "April and May" at San José del Cabo.

Mr. Bryant gives no records of the occurrence of this Ibis in the central and northern portions of Lower California, but Mr. Anthony states that "at San Telmo they were usually seen during summer in small numbers about a large marsh above the settlement, and I think they doubtless bred there. Adults and young were shot at San Quintin in October."[1] There is no reason why they should not breed near Cape St. Lucas, about such lagoons as that at Santiago, for instance, but there is no present proof that such is the case.

The range of the White-faced Ibis on the Pacific coast extends from Oregon to Chili and Patagonia.

[1] Zoe, IV. 1893, 231.

Tantalus loculator Linn.

Wood Ibis.

Tantalus loculator Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268 (San José del Cabo; La Paz).

The Wood Ibis was found near La Paz by both Mr. Belding and Mr. Frazar. The latter met with it frequently in September and October at San José del Cabo, where Mr. Belding also notes "a pair seen in April and May."

As Mr. Bryant gives no original records, it is to be inferred that he failed to detect the Wood Ibis in the central and upper portions of the Peninsula, but Mr. Anthony states that in autumn a few "are to be found in all of the marshes and streams from Ensenada to Santa Maria."[1] It ranges even further to the northward, for it is not uncommon in Ventura county, California.[2] Whether any nest in Lower California is a matter of grave doubt, — not that the climatic conditions are unfavorable, but because of the apparent lack of suitable breeding grounds. To the southward the Wood Ibis is found in Mexico, Central America, and many parts of South America.

Botaurus lentiginosus (Montag.).

American Bittern.

Botaurus lentiginosus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas; San José del Cabo). Belding, *Ibid.*, VI. 1883, 351 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268 (Cape St. Lucas; San José del Cabo; s. of lat. 24° 30′).

The Xantus collection contains specimens of the Bittern taken at Cape St. Lucas on November 4, and at San José del Cabo on November 29 and 30. At the latter place Mr. Frazar found it common during September and the first week of October, after which it was seen only occasionally, the last individual being observed on November 11. Mr. Belding mentions it as "moderately common" south of latitude 24° 30′ in the winter and early spring of 1882–83.

The Bittern was not observed by Mr. Bryant in the central or northern parts of the Peninsula, but Mr. Anthony says that it is "common in the marshes at Colnett and San Ramon, where it doubtless nests."[3] There is no apparent reason why a few pairs may not breed at such places as Santiago and San José del Cabo, but the present indications are that the bird is merely a winter visitor to the Cape Region. It has occurred as far south as Guatemala.

[1] Zoe, IV. 1893, 231.
[2] Cooper, Auk, IV. 1887, 90.
[3] Zoe, IV. 1893, 231.

Ardetta exilis (Gmel.).

Least Bittern.

It is somewhat singular that the Least Bittern has not been previously reported from Lower California, for Mr. Frazar found it in considerable numbers at San José del Cabo in September and October. The first individual was seen on August 29, and the last about October 21. The period of greatest abundance was between September 18 and October 11, but the birds varied greatly in numbers from day to day, indicating that they came and departed in successive migratory flights or "waves." None were noted elsewhere.

The range of the Least Bittern is very extensive, including the whole of temperate North America as well as Mexico, Central America, and the northern portions of South America to Brazil. There is some evidence, — not perfectly conclusive, however, — that it breeds as far south as the Lake of Dueñas, Guatemala. It is very common in summer in the interior of California. The Cape Region, therefore, is probably included within its general breeding range, and it would not be surprising to find it nesting about the lagoon at Santiago, which seems to be admirably adapted to its requirements.

Ardea herodias Linn.

Great Blue Heron.

Ardea herodias Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 15, 16 (discusses the "very light colors" of a Cape St. Lucas specimen, No. 33,134, Nat. Mus.). Belding, Proc. U. S. Nat. Mus., V. 1883, 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268 (San José del Cabo).

The only Great Blue Heron which I have seen from Lower California is an adult male (No. 33,134) in the National Museum, which was taken by Mr. Xantus at San José del Cabo in February, 1860. This specimen has the bill and wing as long as in small specimens of *wardi*, but the tarsus is not longer than in typical *herodias*. The coloring is peculiar in several respects, the upper wing coverts being creamy drab, instead of bluish slate as in *herodias* and *wardi*, the dorsal plumes unusually light colored, and the fore neck, as well as the nape for an inch or more below the occiput, pure creamy white. There is also much less black than usual on the underparts, especially on the breast, which is chiefly creamy white. Mr. Ridgway has already called attention [1] to some of these differences. Should they prove characteristic of the birds of Lower California they would entitle the form to recognition as a distinct subspecies.

Mr. Belding notes this Heron as rare, but Mr. Frazar saw "numbers" about

[1] Ridgway, *Loc. cit.*

La Paz in January and February, and "a few" at San José del Cabo in the latter part of August. Mr. Bryant found it on Santa Margarita Island and Magdalena Bay, and states that it was rare there. Mr. Anthony has reported it as "common at San Quintin and north of that point, also seen to some extent inland. A colony was found nesting on San Martin Island on April 12."[1]

There are no geographical reasons why the Great Blue Heron should not breed in the Cape Region, and as it often builds its nests on low bushes or even jutting rocks, when tall trees are wanting, it is possible that at least a few birds rear their young near La Paz and San José del Cabo.

Ardea egretta Gmel.

American Egret.

Herodias egretta Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region), 548 (San José).

Ardea egretta Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 268, 269 (Cape Region; color of fleshy parts).

Mr. Belding includes this Heron in his list of birds observed in the Cape Region between Dec. 15, 1881, and May 17, 1882. On the latter date he noted it at San José del Cabo, where Mr. Frazar also found it in August. It is apparently not numerously represented near the southern extremity of the Peninsula, but is probably resident there.

About Magdalena Bay Mr. Bryant found it "tolerably common" feeding "in small groups or singly along the beach. . . . In April, 1888, they became more common in places along the *estero* and were seen collected on the mangroves above the water. One night while navigating the *estero*, I saw a large flock which may have been a nesting colony, but it was too dark to investigate and by daylight they were far behind."

The range of the American Egret on or near the Pacific coast extends from Oregon to Patagonia, and the bird is said to breed throughout most of the regions embraced within these limits.

Ardea candidissima Gmel.

Snowy Heron.

Garzetta thula Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), (?) 305, 306 (crit.; Cape St. Lucas).

Garzetta candidissima Belding, Proc. U. S. Nat. Mus., V. 1883, 548 (San José).

Ardea candidissima Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 269 (San José del Cabo).

Small numbers of Snowy Herons were found by Mr. Frazar in winter at La Paz, and in early autumn at San José del Cabo. Several were also seen at the

[1] Zoe, IV. 1893, 231.

latter place by Mr. Belding on May 17, 1882. To the north of La Paz Mr. Bryant considers the bird rare. He saw it "on a few occasions along the *estero*" north of Magdalena Bay, and at San Juan and Comondu. Mr. Anthony, however, found it "very common all along the coast from El Rosario north." He thinks that it nests at San Ramon, for it was seen there all summer.[1] It probably breeds in or near the Cape Region, also, but this remains to be definitely ascertained. Up to within a few years it was common along the coast of southern California, and it is said to breed at least as far north as Oregon. Southward it is distributed throughout Mexico, Central America, and many parts of South America to Chili and Buenos Ayres.

Ardea rufescens Gmel.

Reddish Egret.

Dichromanassa rufa Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region), 548 (San José).

Ardea rufescens Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 269 (Cape Region).

Mr. Belding found this Heron common in the Cape Region in the winter and spring of 1881–82, but he states that it was rare at San José del Cabo on May 17, 1882. He emphasizes the fact that none were seen in white plumage. Mr. Frazar met with it at both La Paz and San José del Cabo, but not commonly at either place. His single specimen (No. 18,146, ♀, La Paz, January 11) is a "red" bird.

Mr. Bryant gives the Reddish Egret as "tolerably common at Santa Margarita Island, which was probably a night roosting place for many amongst the mangroves. Ten were seen in one flock on February 14, 1888." Mr. Anthony states that the species is "not uncommon at San Quintin."[2]

The locality last mentioned is apparently the most northern one on the Pacific coast from which the bird has been reported. To the southward it is found in Mexico, Guatemala, and northern South America.

Ardea tricolor ruficollis (Gosse).

Louisiana Heron.

Hydranassa tricolor ludoviciana Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region), 548 (San José).

Ardea tricolor ruficollis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 269 (Cape Region).

Mr. Belding records the Louisiana Heron as less common at La Paz than the Reddish Egret, and "rare" at San José del Cabo on May 17, 1882. Mr.

[1] Zoe., IV. 1893, 231. [2] *Ibid.*, 231

Frazar, however, found it common at both these places in 1887. Mr. Bryant "saw two flying above the mangrove tops of the *estero*" north of Magdalena Bay in March, 1888, and during the same month of the following year noted a small flock rising "from the lagoon on Santa Margarita Island." This Heron, as well as the Reddish Egret, probably breeds on or near the southern coasts of the Peninsula, but is not positively known to do so. It has not as yet been detected in California, but it occurs on the western coast of Mexico and southward to Guatemala.

Ardea virescens frazari Brewst.

Frazar's Green Heron.

[*Ardea*] *virescens* Coues, Key N. Amer. Birds, 1872, 268, 269, part.

Ardea virescens Coues, Check List, 1873, 89, no. 457, part. A. O. U., Check List, 1886, 137, no. 201, part.

Butorides virescens Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 42, no. 494, part. Coues, Check List, 2d ed., 1882, 107, no. 663, part. Sharpe, Cat. Birds Brit. Mus., XXVI. 1898, 186–191, 280, part (crit.; synonymy; Lower California).

(?) *Butorides virescens* (not *Ardea virescens* Linnaeus) Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).

Ardea virescens frazari Brewster, Auk, V. 1888, 83 (orig. descr.; type from La Paz). A. O. U. Comm., Suppl. to Check List, 1889, 6; Check List, abridged ed., 1889, and 2d ed., 1895, no. 201 a. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 269 (Cape Region; Santa Margarita Island; Comondu). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 586 (descr.; vicinity of La Paz).

Butorides virescens frazari Coues, Key N. Amer. Birds, 4th ed., 1894, 905 (descr.; vicinity of La Paz).

[*Butorides*] *frazari* Sharpe, Hand-list, I. 1899, 200.

This race of the Green Heron, distinguished from *A. virescens* by its larger size and deeper, richer coloring, was discovered in 1887 by Mr. Frazar, who found it only at La Paz. His notes state that it frequented mangrove thickets about the shores of the Bay, where it was "common" during February and March, but as he mistook it for our eastern bird he preserved only two specimens. It is probably the resident and characteristic form of this locality, as well as of some of the neighboring islands, and it may range considerably further to the northward along one or both coasts of the Peninsula, for Mr. Bryant has reported seeing it in small numbers "at Santa Margarita Island and along the *estero*, also at Comondu. No specimens were secured," but Mr. Bryant thinks that "a skin in the collection of the California Academy of Sciences from Magdalena Bay, is probably referable to this form." All these records require confirmation, however, for at the time they were made Mr. Frazar's bird was the only Green Heron known to occur in Lower California.

Ardea virescens anthonyi Mearns.

Anthony's Green Heron.

(?) *Butorides virescens* (not *Ardea virescens* Linnaeus) Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).

The Green Herons taken by Mr. Frazar at San José del Cabo seem to be all *A. v. anthonyi*. At least they are much too large for *virescens*, while the young (nine in number) agree perfectly with young specimens of *anthonyi* from California. Like the latter they have the white on the tips of the primaries and secondaries, and the light edging on the wing coverts much broader and more conspicuous than in the young of our eastern bird. The three adults are very unlike the only two known specimens of *frazari* (both of which are fully mature), having the chestnut of the head and neck even lighter and more rufous than in *virescens*, instead of deeper and more glaucous, as is the case with *frazari*. In this respect, as well as in size, they are typical of *anthonyi*, but in respect to the extent and distribution of the whitish or rusty markings on the wings and under parts they agree better with *virescens*.

Anthony's Green Heron is probably only a transient visitor to the Cape Region. At least Mr. Frazar did not meet with it in winter or early spring at La Paz nor anywhere during the breeding season. It was common at San José del Cabo, however, from August 25 to about October 15; after the latter date only an occasional straggler was noted, the latest on November 11. Rather curiously, all the birds seen at the locality just named occurred along the sand bars and sandy shores of the river, although there were plenty of muddy creeks and pools in the immediate neighborhood.

The general range of this form of the Green Heron is not, as yet, definitely known. It has been found breeding in Arizona and southern California, and I have a typical example (taken on May 13) from Franktown, Nevada. It is said to be represented in the Smithsonian Collection by specimens from the Valley of Mexico and from Santa Efigenia, Tehuantepec.

Nycticorax nycticorax naevius (Bodd.).

Black-crowned Night Heron.

Nycticorax griseus naevius Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).

Nycticorax nycticorax naevius Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 270 (Cape Region).

This Night Heron was found in the Cape Region by both Mr. Belding and Mr. Frazar. The latter observer noted it at La Paz in winter, and at San José del Cabo in October. "A few were seen at Santa Margarita Island in the month of February, 1888," by Mr. Bryant.

If the Black-crowned Night Heron does not nest in Lower California, it must be because the local conditions are in some way unfavorable, for its general breeding range includes the whole of temperate North America and most of South America, also.

Nycticorax violaceus (Linn.).

Yellow-crowned Night Heron.

Nycticorax violaceus Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region), 548 (San José).

Nycticorax violaceus Bryant, Proc. Calif. Acad. Sci., 2d ser., II 1889, 270 (Cape Region).

Mr. Belding found the Yellow-crowned Night Heron "very common" on May 17, 1882, at San José del Cabo, where, according to Mr. Frazar, it also occurs numerously in autumn, "arriving early in September." The latter observer also met with it in considerable numbers at La Paz in winter. About Magdalena Bay "many night herons were nesting in April, 1888, in a mangrove thicket bordering the long *estero;* they all appeared to be of this species. When alarmed by the passing of the sail-boat, they left the bushes and collected along the water's edge, where I counted eighty" (Bryant).

On the Pacific coast the Yellow-crowned Night Heron is not known to go as far northward as California. It ranges southward to Central America and northern South America.

Rallus beldingi Ridgw.

Belding's Rail.

Rallus beldingi Ridgway, Proc. U. S. Nat. Mus., V. 1882, 345, 346 (orig. descr.; type from Espiritu Santo Islands); VI. 1883, 158, footnote (crit.; S. Lower Calif.). Belding, *Ibid.*, V. 1883, 545 (Espiritu Santo Islands). Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 356, 357 (descr.; crit.; Espiritu Santo Island; La Paz). A. O. U., Check List, 1886, 140, no. 209. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 270 (Espiritu Santo Island; La Paz). Sharpe, Cat. Birds Brit. Mus., XXIII. 1894, 10 (descr.; La Paz; Espiritu Santo Island, etc.; subsp. of *Rallus elegans*). Coues, Key N. Amer. Birds, 4th ed., 1894, 888 (descr.; Espiritu Santo Island).

[*Rallus*] *beldingi* Sharpe, Cat. Birds Brit. Mus., XXIII. 1894, 7 (key to species); Hand-list, I. 1899, 93.

R.[*allus*] *beldingi* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 138 (descr ; La Paz; Espiritu Santo Island, etc.).

The type specimen of this Rail was taken by Mr. Belding on Espiritu Santo Island, but Mr. Frazar found the bird only about the shores of the Bay near La Paz, where it inhabits mangrove thickets bordering mud flats or intersected

by small tidal creeks. It is evidently rare here, for Mr. Frazar shot only two specimens, and saw or heard less than half a dozen in all.

"Rails were heard in mangrove swamp on Santa Margarita Island, Magdalena Island, and for one hundred and twenty miles up the *estero*. They were clapper rails, but whether *R. beldingi* I cannot say" (Bryant).

On the basis of this scanty evidence it is impossible to do more than speculate concerning the habits and distribution of Belding's Rail. The bird is apparently confined to the southern half of the Peninsula, for on the northwest coast (San Quintin Bay) its place is taken by the California species, *Rallus obsoletus*. *R. beldingi* is probably resident wherever found, but as yet even this cannot be positively asserted.

Rallus virginianus Linn.

Virginia Rail.

Mr. Frazar found the Virginia Rail only at San José del Cabo, where he killed a specimen on October 24 and another on November 4. He is very sure that he saw three others, the first on October 3, the second on October 6, and the third on November 4. The bird has not been previously reported from the Cape Region, but "Mr. Anthony has taken it at San Quintin in winter." [1]

It is abundant in the winter months in different parts of Mexico, and it has been obtained as far south as Guatemala. In California it is said to occur at all seasons of the year, and it may be resident, locally, in Lower California, also.

Porzana carolina (Linn.).

Sora. Carolina Rail.

Porzana carolina Belding, Proc. U. S. Nat. Mus., V. 1883, 547 (San José del Cabo); VI. 1883, 351 (La Paz and s.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 270 (San José del Cabo; La Paz).

Mr. Belding, in his list of birds observed in the "vicinity of La Paz and southward" between December 15, 1882, and March 23, 1883, mentions the Sora as "rarely seen," and in a paper relating to his experience of the preceding year he also refers to it incidentally, as one of the birds found between April 1 and May 17 in the marsh at San José del Cabo. These allusions, although vague and unsatisfactory, indicate that at least a few Soras pass the winter in the Cape Region, and that others occur there rather late in the spring. Mr. Frazar's experience unfortunately furnishes nothing bearing directly on these points, for he met with the Sora only in autumn, at San José del Cabo. It was very numerous there during the latter half of September and first ten days of October, after which only a few stragglers were noted, the last on Oc-

[1] Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 270.

tober 18. It was usually seen in beds of tall reeds and cat-o'-nine tails growing about the margins of the lagoon, but on one occasion (September 20), when an exceptionally high tide had broken over the beach and raised the water several feet above its usual level, the birds were driven from their favorite haunts and forced to seek shelter in a neighboring wheat field, where many were flushed and killed.

The Sora was seen by Mr. Anthony "in spring along the coast north of lat. 31°" (Bryant). It is said to be common in California in winter, and according to Mr. Grinnell is found in Los Angeles county at all seasons, nesting in May among marsh grass or tules in swampy places.[1] Its migrations extend to northern South America.

Gallinula galeata (Licht.).

Florida Gallinule.

It is singular that up to this time no one has reported the Florida Gallinule from Lower California, for Mr. Frazar found it both at San José del Cabo and Santiago. At the former place the first birds, three in number, were seen on September 13. A few days later they became abundant, remaining so up to October 10, after which their numbers diminished rapidly until, by the end of the month, all had apparently disappeared, the last being seen on the 28th. They frequented both the river and the lagoon at its mouth, but during the high tide already mentioned a good many, in company with Carolina Rails, sought shelter in a wheat field. At Santiago several were observed as late as November 15 in the beds of tule about the lagoon, where it is possible they were intending to winter, and where a few may breed, also, although neither surmise is warranted by any present evidence.

The Florida Gallinule is found from California to Chili on or near the Pacific coast, and it probably breeds (more or less locally) throughout this extended range.

Fulica americana Gmel.

American Coot.

Fulica americana Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 306 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271 (Cape Region).

Mr. Belding includes the Coot in his list of birds seen in the winter and spring of 1881–82, but mentions no special localities nor dates. Mr. Frazar found it only at San José del Cabo and Santiago. At the former place it arrived on September 10, and was very numerous during October and up to the date of Mr. Frazar's departure, November 13. At Santiago a large number

[1] Pub. II. Pasadena Acad. Sci., 1898, 15.

were seen daily, during the latter half of November, in the lagoon already described. "Mr. Anthony found them very abundant all winter in the northern portion of the peninsula, and breeding where fresh water was in sufficient quantity. He found a pair nesting on San Pedro Martir in May, at an altitude of 8,200 feet" (Bryant). Others have been seen by Mr. Bryant at Comondu, San Juan (April), and "lower Purisima cañon, where they were probably breeding."

The Coot has a very extended range on or near the Pacific coast, occurring numerously nearly everywhere from Alaska to northern South America, and breeding wherever the local conditions are suited to its tastes, without much apparent regard for considerations of latitude or mean temperature.

Crymophilus fulicarius (Linn.).

Red Phalarope.

Phalaropus fulicarius Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).
Crymophilus fulicarius Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271 (La Paz Bay).

Although the Red Phalarope has received but nominal mention on the part of Mr. Belding, that observer, according to Mr. Bryant, has killed two specimens in La Paz Bay, the only ones, apparently, which have ever been taken in the Cape Region. Birds supposed to belong to this species have also been seen on several occasions off the Pacific coast of the Peninsula by both Mr. Bryant and Mr. Anthony, but as none of them have been secured their identification is perhaps open to some doubt.

The Red Phalarope breeds only in high northern latitudes. The southern extension of its winter range in the Western hemisphere has not been definitely ascertained, but in the Eastern it has occurred in northern Africa and at Calcutta, India. It visits the coast of California in moderate numbers at its seasons of migration, occurring oftenest, apparently, in autumn.

Phalaropus lobatus (Linn.).

Northern Phalarope.

Two adult Northern Phalaropes, both females, shot by Mr. Frazar on August 29, retain much of the breeding plumage, especially on the front and sides of the neck, which are faded but distinct rufous. A male taken on September 27 is in excessively worn and faded summer plumage, which is interspersed with a few feathers of the winter dress. All the other birds in the series appear to be adults in winter plumage, or young in their first autumn plumage, intermixed, in some specimens, with more or less feathers of the winter plumage.

Mr. Frazar found the Northern Phalarope not uncommon in early autumn at

San José del Cabo, where fourteen specimens were taken, the first on August 29, the last on October 7. They frequented the large fresh-water lagoon just back of the beach, and as many as six or seven were sometimes to be seen at one time scattered about on the surface of the water. A few were also met with in the creeks which connected with this lagoon. Most of the birds examined had lost one or more toes, and two or three an entire foot, and part of the tarsus, also, while others showed gaping wounds on the breast. These mutilations were probably caused by the bites of fishes. This species has not been previously reported from the Cape Region, but "Mr. Belding secured three specimens at San Rafael, May 16" (Bryant).

The Northern Phalarope is not known to breed south of the Arctic regions. It occurs abundantly at its seasons of migration along the coast of California, and in winter ranges as far southward as Guatemala and the Isthmus of Tehuantepec.

Steganopus tricolor Vieill.

Wilson's Phalarope.

Steganopus wilsoni Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (La Paz and s.).
Phalaropus tricolor Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271 (San José del Cabo).

But three Wilson's Phalaropes are known to have been taken in Lower California. Mr. Belding obtained the first some time in the spring of 1883, at San José del Cabo, where Mr. Frazar collected the other two in August, 1887. One of Mr. Frazar's specimens, shot on the 30th of the month, is in the gray winter plumage, but appears to be an old bird. The other, killed on the 31st, is a young bird in a plumage intermediate between that of autumn and winter. Both are males.

This species is doubtless rare in Lower California, for unlike the Northern and Red Phalaropes it shuns salt water, and seldom visits either sea-coast of North America, preferring, at all seasons, fresh-water ponds and rivers in the interior, where its breeding range extends from the more northerly United States to about latitude 55° N. In winter it is said to be rather common on some of the interior lakes in Mexico, and it has once been found in Guatemala.

Recurvirostra americana Gmel.

American Avocet.

Recurvirostra americana Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271 (La Paz).

Mr. Frazar met with the Avocet only four times in all, at La Paz on February 3, and at San José del Cabo on October 15, 18, and 26. On the first three occasions single birds were seen, on the last a flock of eight. Mr. Beld-

ing gives the species as "not common"; Mr. Bryant does not mention finding it at all; Mr. Anthony says that it is "not uncommon at San Quintin, Colnett and Ensenada" in the northern part of the Peninsula, where it occurs in autumn, only "about the fresh water marshes." [1]

In Los Angeles county, California, it is "found in marshy districts in varying numbers throughout the year," and it "breeds commonly in the vicinity of the Alamitos swamps and Nigger Slough." [2] In winter it migrates as far southward as Guatemala.

Himantopus mexicanus (Müll.).

Black-necked Stilt.

Himantopus mexicanus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Sierra de Santiago; Cape St. Lucas; San José del Cabo). Belding, *Ibid.*, VI. 1883, 352 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271 (La Paz).

Between September 14 and October 19 Mr. Frazar took four specimens of the Stilt at San José del Cabo. He notes it as "not at all common" there, and did not meet with it elsewhere. Xantus found it at Sierra de Santiago in January, and at Cape St. Lucas and San José del Cabo in February. Belding gives it as "not common" in his list of birds found south of latitude 24° 30′. There is no evidence that it breeds in this region.

In the northwestern part of the Peninsula Mr. Anthony has seen the Stilt "during migrations about fresh water" (Bryant). According to Mr. Grinnell it is "common in spring and fall on the margins of ponds and marshes" in Los Angeles county, California, where it also "breeds locally in considerable numbers. Evan Davis has taken eggs at Alkali Lakes near Santa Ana from the first of May until August." [3]

The Stilt apparently goes further southward in winter than the Avocet, invading South America to Peru and Brazil. It breeds at least as far to the southward as Matamoras, Mexico, and as far to the northward as Oregon.

Gallinago delicata (Ord).

Wilson's Snipe.

Gallinago wilsoni Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José). Belding, *Ibid.*, VI. 1883, 351 (La Paz and s.).

Gallinago delicata Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 271, 272 (San José del Cabo; La Paz).

Mr. Belding notes Wilson's Snipe as "rare," but Mr. Frazar found it in considerable numbers at both San José del Cabo and Santiago. Near the former

[1] Zoe, IV. 1893, 231.

[2] Grinnell, Pub. II. Pasadena Acad. Sci., 1898, 16.

[3] *Ibid.*

place three were seen as early as August 28; the date of greatest abundance was October 18, after which there was a rapid decrease, the last bird being seen on November 9. At Santiago, however, these Snipe were numerous on November 17, and a single bird was flushed near the summit of the Sierra de la Laguna, on November 28. Mr. Bryant "saw a few at Comondu in March and April, 1888," and Mr. Anthony found them rare "in the region embraced in his explorations (San Fernando to Ensenada)" (Bryant).

Wilson's Snipe migrates as far southward as Central America, and breeds from Oregon northward.

Macrorhamphus scolopaceus (Say).

Long-billed Dowitcher.

At San José del Cabo Mr. Frazar killed nine Long-billed Dowitchers on August 28, and during September and October large flocks were seen almost daily. They were also very common at Santiago in November, the latest date mentioned in Mr. Frazar's notes being the 17th. In view of these facts it seems curious that the bird has not been previously reported from this region. A little farther north, however, Mr. Bryant has found it[1] "common at Magdalena Bay, where small flocks associated with willet and godwit," and still more plentiful on mud flats along the *estero* to the northward of this Bay, where it occurred in March.

Red-breasted Snipe, presumably of this species, were found commonly on the Pacific coast of Guatemala by Mr. Salvin,[2] and specimens are said to have been taken in Chili. Dr. Brewer gives its breeding range as extending "from lat. 44° N. to the Arctic Ocean."[3]

Tringa maculata Vieill.

Pectoral Sandpiper.

This Sandpiper, also, is an addition to the fauna of the Cape Region. Indeed, it does not seem to have been previously reported from any part of Lower California. It is represented in Mr. Frazar's collection by nine specimens taken at various dates between September 2 and October 24 at San José del Cabo, where, according to the accompanying notes, it occurred in considerable numbers.

The Pectoral Sandpiper is "not rare at San Francisco Bay in winter," according to Dr. Cooper,[4] but it does not appear to have been found in any

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 272.

[2] Ibis, 1865, 191.

[3] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 197.

[4] Auk, III. 1886, 124.

other part of California. It is believed to breed only within the Arctic regions, but it migrates southward in winter as far as Chili, and even to northern Patagonia.[1]

Tringa bairdii (Coues).

Baird's Sandpiper.

Still another Sandpiper new not only to the Cape Region, but to the Peninsula at large, is the present species, of which Mr. Frazar took four specimens at San José del Cabo between September 3 and 13. According to Baird, Brewer, and Ridgway, it had not been "recorded from the Pacific coast of the United States"[2] when the Water Birds appeared.

Baird's Sandpiper "was found breeding on the Barren Grounds, June 24, by Mr. MacFarlane,"[3] and is believed to winter in South America, where it goes as far south as Peru and Chili. Its migrations, in North America at least, are performed chiefly through the interior. Although it is supposed to be normally confined to the New World, a specimen has been taken at Walfish Bay in South Africa.

Tringa minutilla Vieill.

Least Sandpiper.

Actodromas minutilla Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Todos Santos).

Tringa minutilla Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 272 (Todos Santos).

Mr. Ridgway's mention of a specimen without date taken by Xantus at Todos Santos (on the west coast) appears to be the only previous record of the occurrence of this species in the Cape Region. Nevertheless it visits the Gulf coast of the Peninsula in considerable numbers, both in spring and autumn, for Mr. Frazar took two specimens on March 6, at Carmen Island, and no less than eleven the following autumn at San José del Cabo. At the latter place they were first seen on August 23, and by the 28th had become numerous. Through September they were met with almost daily, but none were observed after October 3. Mr. Bryant says that "Mr. Anthony noticed them at San Quintin Bay. At Magdalena Bay they were seen in small flocks and specimens taken; also at lower Purisima cañon."

The Least Sandpiper breeds chiefly if not exclusively north of the United States. It is of common occurrence on the coast of California in winter, when it also visits central and northern South America, as well as the Galapagos Islands.

[1] Ibis, 1877, 43.

[2] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 230.

[3] Baird, Brewer, and Ridgway, *Loc. cit.*, 232.

Tringa alpina pacifica (Coues).

Red-backed Sandpiper.

Pelidna alpina americana Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (s. of lat. 24° 30′).

Mr. Belding found the Red-backed Sandpiper "very common in winter" south of latitude 24° 30′, in 1882–83. It has not been reported from this region by any one else, and was not met with by Mr. Frazar. Mr. Bryant is not sure that he "saw any of this species at Magdalena Bay." He states that Mr. Belding "mentions it as abundant at San Quintin Bay, May 2, 1882, but rare by May 10."

The American Red-backed Sandpiper is not known to occur south of Lower California on the Pacific coast, and the greater number of individuals probably winter north of San Francisco, for it is a hardy bird and quite able to endure rather severe frost. Its breeding grounds lie exclusively north of the United States.

Ereunetes occidentalis Lawr.

Western Sandpiper.

Ereunetes pusillus occidentalis Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

Ereunetes occidentalis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 272 (Cape Region).

Mr. Belding gives this species without remarks in his list of birds noted between December 15, 1881, and May 17, 1882. Mr. Frazar found it only at San José del Cabo, where it was abundant during the last week of August and most of September, the last specimen being taken on the 30th of the latter month. Mr. Bryant mentions seeing "a few in a flock of *T. minutilla*" at Magdalena Bay, and adds that Mr. Belding found it abundant at San Quintin Bay "May 2, 1882, but rare by May 10." Mr. Grinnell states that it visits the coast of Los Angeles county, California, "in immense flocks during September and April."[1]

The Western Sandpiper breeds in Alaska, and winters on the coast of Central America.[2]

[1] Pub. II. Pasadena Acad. Sci., 1898, 17.

[2] Seebohm, Geogr. Distr. Charadriidae, 1888, 404.

Calidris arenaria (Linn.).

Sanderling.

Calidris arenaria Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 306 (Cape St. Lucas). Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 272 (Cape Region).

There is a nominal mention of the Sanderling in Professor Baird's notes on the Xantus collection of 1859, but Mr. Belding does not include it in any of his lists. It was found by Mr. Frazar only at San José del Cabo, where, on the sea beach, three specimens were seen and two shot on October 18, and four seen and three taken on October 22. The species winters abundantly on the northwestern coast of the Peninsula according to Mr. Bryant, who also records a single bird obtained "on Santa Margarita Island March 4, 1889, from a flock of *Ægialitis nivosa*."

The Sanderling is a nearly cosmopolitan species, whose wanderings cover almost the entire globe, but it breeds only in Arctic and Subarctic regions. On the west coast of America its winter range extends to Patagonia. It is "common throughout the winter in flocks on the sandy sea beaches" of Los Angeles county, California, where it regularly lingers until the middle of May, and sometimes as late as the first week of June.[1]

Limosa lapponica baueri (Naum.).

Pacific Godwit.

Limosa lapponica novae-zealandiae Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

Limosa lapponica baueri Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 273 (La Paz).

A bare mention of the name of this Godwit in Mr. Belding's list of the Birds found in the Cape Region between December 15, 1881, and May 17, 1882, constitutes the only record of its occurrence in North America, south of Alaska, according to Mr. Ridgway,[2] who informs me that the authenticity of the record is open to no doubt, for the head of the specimen is preserved in the National Museum. It is labeled simply "No. 86,418, La Paz," and, without question, is that of an adult *L. l. baueri* in winter plumage. Mr. Belding writes me concerning this bird: — "I can only say I killed it at La Paz, but was not aware that I had taken anything but the common kind until Professor R. informed me to the contrary. I believe I sent only a head and wings. I had hurt my right hand by a large dead cactus that toppled over and fell on me. I could

[1] Grinnell, Pub. II. Pasadena Acad. Sci., 1898, 17.

[2] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 258.

not skin a bird for more than a month. That accounted mostly for the fragments of some water birds I sent to the Smithsonian."

The Pacific Godwit breeds abundantly in Alaska, where it was first found by Dall, and afterwards by Elliott, Nelson, and Turner. Mr. Nelson in his Report upon Natural History Collections made in Alaska between the years 1877 and 1881 (pp. 115, 116), gives a good account of its habits, changes of plumage, etc. The members of this Alaska colony are supposed to cross the Pacific Ocean during migration, and to winter, in company with the birds of the same species which breed in the northern portions of eastern Asia, in the islands of the Malay Archipelago, Australia, the New Hebrides, Norfolk Island, and New Zealand.

Totanus melanoleucus frazari, subsp. nov.[1]

Gray Yellow-legs.

Totanus melanoleucus (not *Scolopax melanoleucus* Gmelin) Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (San José; Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 351 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 273 (n. of La Paz).

Subspecific characters: — Slightly larger than *T. melanoleucus*; the bill somewhat slenderer, the general coloring much grayer, the white streaks of the nape and top of head broader; the dark streaks of the jugulum, breast and sides of neck and the dark bars on the sides of the body fewer, finer and fainter; the sides of the head whiter, with less dark mottling.

Winter plumage: — Male (No. 17,815, collection of William Brewster, San José del Cabo, Lower California, October 27, 1887; M. Abbott Frazar). Above light ashy gray, the feathers of the back bordered with ashy white; those of the scapulars and wing coverts notched on both webs with brownish white; upper tail coverts white with a few dark bars; primaries dark slaty, lighter, and with more or less grayish mottling on the inner webs of most of the feathers; tail white, all the feathers barred with dusky; the middle feathers grayish with obscure dusky bars; under parts pure white, the jugulum, fore part of breast and sides of neck finely streaked with obscure dusky; sides irregularly marked with grayish and dusky; under wing coverts and axillars white with obscure V shaped markings of dull slaty; under tail coverts pure white, with a few narrow dark bars; sides of head white with fine, sparse specks of dusky everywhere, excepting over a space extending from above the eye to the base of the culmen, where the white is immaculate; a nearly solid patch of dusky on the anterior portion of the lores. Wing, 6.95; tarsus, 2.30; length of bill from nostril, 1.86; depth at nostril, .25.

The bird above described, like all of my twenty or more additional specimens which unmistakably belong to the same race, is in winter plumage.

[1] Of the several names which have been bestowed on the Greater Yellow-legs all appear to relate to the eastern bird, except *Totanus chilensis* Philippi, Arch. f. Nat., pt. I. 1857, 264 (Chili), which is indeterminable. I have named the new bird for Mr. M. Abbott Frazar.

What the summer dress is like I am not prepared to state, but I have reasons for suspecting that breeding examples of the eastern and western (or interior) forms are not easily distinguishable from one another. I was at first inclined to think that the bird which I have named *frazari* was merely the adult of *melanoleucus* in winter plumage, but a careful examination of Mr. Frazar's specimens has satisfied me that several of them are young, and on comparing them with a good series of both adults and young of *melanoleucus*, shot at corresponding dates in New England, I have become convinced that the differences to which I have just called attention cannot be satisfactorily explained other than by the assumption that they characterize two distinct geographical races. A rather puzzling feature of the case is that I have several specimens perfectly typical of *melanoleucus* from British Columbia, and a dozen or more equally characteristic of *frazari* from Georgia and Florida, but birds of such free powers of flight as Yellow-legs are notorious wanderers, and it may be that *frazari* breeds only in the *interior* of British America and that it does not visit either the Atlantic or Pacific coast until it has passed well to the southward of the northern boundary of the United States.

This hitherto unrecognized form of the Greater Yellow-legs is, no doubt, the bird which Mr. Xantus found at San José del Cabo (December) and Cape St. Lucas (date not recorded), which Mr. Belding gives as "very common in winter" south of latitude 24° 30′, and which Mr. Bryant reports as "tolerably common along the estero" north of Magdalena Bay and also "seen about fresh water at Comondu and San Pedro." Mr. Frazar noted a single bird at La Paz on March 21, and between September 19 and October 20 collected fourteen specimens at San José del Cabo, where, however, he did not meet with them in any great numbers. His latest record at this place is November 9, when two birds were observed.

Totanus flavipes (Gmel.).

YELLOW-LEGS.

Although the Yellow-legs has not been previously recorded from any part of Lower California Mr. Frazar found it much more numerous than *T. melanoleucus frazari*. It was, however, observed only at San José del Cabo where it became common as early as August 28, but did not reach its maximum abundance until the middle of September, when upwards of two hundred were sometimes seen in the course of a single day. After September 20, its numbers rapidly diminished and the last bird was taken on October 7.

This Yellow-legs winters as far south as Patagonia and breeds in the Arctic and Subarctic portions of North America.

Helodromas solitarius (Wils.).

Solitary Sandpiper.

[*Totanus*] *solitarius* Brewster, Auk, VII. 1890, 378 (crit.; San José del Cabo).

An adult male Solitary Sandpiper (No. 17,739) taken by Mr. Frazar at San José del Cabo, on October 28, agrees perfectly in size as well as coloring with autumnal adults of this species from the Eastern States, and is apparently true *solitarius* which is probably a mere accidental wanderer to this region, for all the other specimens in the collection belong to the following subspecies. It is possible, however, that the bird just referred to is really an exceptionally small example of *cinnamomeus*, for the latter when in fully mature plumage does not appear to differ in respect to either color or markings from *solitarius*.

Helodromas solitarius cinnamomeus (Brewst.).

Western Solitary Sandpiper.

Totanus solitarius cinnamomeus Brewster, Auk, VII. 1890, 377, 378 (orig. descr.; type from San José del Cabo).

This form was found only at San José del Cabo where, between August 25 and September 2, seven specimens were taken. It is characterized in Mr. Frazar's notes as "not numerous" and it was not seen after September 28. Neither this nor the typical form has been detected elsewhere in Lower California.

H. solitarius is recorded from California and from South America as far south as Peru, but it is safe to assume that many if not most of the birds which migrate up and down the Pacific coast are really representatives of the present subspecies.

According to Mr. Grinnell *cinnamomeus* is the only form which occurs in Los Angeles county, California, where it is a "common migrant on the interior lowlands."[1] It probably does not breed anywhere to the southward of British Columbia.

Symphemia semipalmata inornata Brewst.

Western Willet.

Symphemia semipalmata (not *Scolopax semipalmata* Gmelin) Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape Region). Belding, *Ibid.*, VI. 1883, 351 (s. of lat. 24° 30′).

[1] Pub. II. Pasadena Acad. Sci., 1898, 17.

Symphemia semipalmata inornata Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 273 (near La Paz).

My reference of the specimens taken by Mr. Frazar to this form is tentative and based largely on geographical considerations, for I confess that I am quite unable to find any characters which may be depended on to separate *inornata* from *semipalmata* when in the gray plumage. The difference in size is merely an average difference, and in winter the two birds appear to be colored precisely alike. It is, indeed, not impossible that both forms are represented in my series from the Cape Region, although certainly more probable that all the birds which visit the Peninsula, as well as those which occur in California, are *inornata*.

Mr. Frazar met with this Willet in winter at La Paz and in autumn at San José del Cabo, where the first individual was seen on September 6, the last on October 18. The birds were not numerous at either place, and only four specimens were taken.

Mr. Belding seems to have had a different experience, for he found Willets, which presumably belonged to this subspecies "very common in winter" south of latitude 24° 30′. Mr. Bryant speaks of seeing the Western Willet at Magdalena Bay in April (as late as the 28th) and he further states that "at San Quintin Bay Mr. Anthony noted them as abundant in winter, and a few were seen throughout the summer."

The Willet has a very extended range, occurring from about 56° N. latitude to the Pampas in South America. Neither the summer nor winter distribution of the subspecies *inornata* is at all definitely known, but it has been found in winter in the southern United States and it certainly breeds in Utah, Dakota, and other inland districts of North America. Mr. Grinnell reports that it is a "common migrant and occasional through the winter on the tide marshes along the coast" of Los Angeles county, California.[1]

Heteractitis incanus (Gmel.).

Wandering Tatler.

Mr. Ridgway, in the Manual,[2] says that the adult of *H. incanus* in the winter plumage is "without any bars on lower parts," but two of Mr. Frazar's specimens, both taken on October 1 and otherwise in apparently full winter dress, have the middle of the breast, the abdomen, and the under tail coverts rather conspicuously and coarsely barred with slaty brown. A third, shot the same day, has the breast and sides similarly barred, but the middle of the abdomen and the under tail coverts are immaculate. As the barred feathers in all three birds are more or less worn and apparently remnants of the summer plumage, it is probable that they would have disappeared later in the season.

[1] Pub. II. Pasadena Acad. Sci., 1898, 17.

[2] Man. N. Amer. Birds, 2d ed., 1896, 167.

The Wandering Tatler was of course to be expected in this region, for it is a common bird on the coast of California, and was found by Mr. Belding at Cerros Island,[1] while it has occurred as far to the southward as the Galapagos. Mr. Frazar, however, seems to have been the first to detect it in the region of which this paper especially treats. He met with it only twice, on October 1 and 22, both times on a rocky point that juts out into the sea near San José del Cabo. On the first occasion he saw nine birds, of which seven were secured. Their attitudes when standing on the rocks were like those of Oystercatchers, but their actions more nearly resembled those of the Spotted Sandpiper, although none of the "teetering" motions which are so characteristic of the latter were observed. During his second visit to this point only one bird was found.

Actitis macularia (Linn.).

Spotted Sandpiper.

Tringoides macularius Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 548 (San José).

Actitis macularia Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 273, (Cape Region).

On comparing fifteen specimens (all autumn birds) of this Sandpiper from the Cape Region with a large number of eastern examples I find that the bills of the former are almost invariably longer, although the other dimensions do not appear to be greater. In coloring, the Lower California birds are in no way peculiar. A male shot on September 1 has the entire abdomen, as well as the breast posteriorly, sparsely but coarsely spotted with dull black. Another male, taken on October 26, also shows a few fine dusky spots on the flanks and anal region. In both specimens the spotted feathers are fresh, unworn, and evidently a part of the winter plumage, although Mr. Ridgway describes this[2] as without spotting on the under parts.

Mr. Belding, in his list of birds seen on May 17, 1882, at San José del Cabo, characterizes the Spotted Sandpiper as "rare," but Mr. Frazar found it at this place in considerable numbers during the whole of September, and less numerously, but still rather frequently, in October, up to the 26th. He also noted it as "not rare" at Carmen Island on March 6, and his collection contains a bird taken at Triunfo on April 8. Mr. Bryant reports it from Magdalena Bay and Ensenada, and adds that "Mr. Anthony has seen it in the fall, and Mr. Belding May 12, at San Rafael."

The Spotted Sandpiper visits Central America and the northern portions of South America in winter, but it is not known to breed south of the United States. To the northward, along the Pacific coast, its summer range extends to Alaska.

[1] Proc. U. S. Nat. Mus , V. 1883, 532.

[2] Man. N. Amer. Birds, 2d ed., 1896, 170.

Numenius longirostris Wils.

Long-billed Curlew.

Numenius longirostris Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 273 (Cape Region).

Mr. Frazar found the Long-billed Curlew at La Paz, where it was "common in February," and at San José del Cabo, whence he sent me several specimens collected late in August and early in September. Mr. Belding mentions it without comment in his list of birds seen in the winter and spring of 1881–82. Mr. Bryant considers it rare about Magdalena Bay, but says that further northward, according to Mr. Anthony, it is "very abundant along the coast in winter, and fairly swarming at San Quintin Bay."

The range of this species on the Pacific coast extends from Vancouver's Island to Guatemala. It breeds in the interior, not anywhere to the southward of California, so far as is known.

Numenius hudsonicus Lath.

Hudsonian Curlew.

Numenius hudsonicus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region), 547 (San José del Cabo). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 274 (Cape Region).

This Curlew, according to Mr. Frazar, is more numerous in Lower California than the Long-billed species. Like the latter, it occurred in February and March at La Paz, and in the autumn at San José del Cabo, where the first (three birds) were seen on August 29, and the greatest number about September 15, after which they became scarce. Mr. Bryant reports them common at Magdalena Bay, and they have been observed at San Quintin Bay by Mr. Anthony.

The Hudsonian Curlew breeds only in the extreme northern portions of the American continent, but it migrates as far southward as Patagonia, and has been seen on the Galapagos. According to Mr. Grinnell, it is of common occurrence in Los Angeles county, California, during the migrations in spring and autumn.[1]

Squatarola squatarola (Linn.).

Black-bellied Plover.

Squatarola helvetica Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).
Charadrius squatarola Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 274 (Cape Region).

[1] Pub. II. Pasadena Acad. Sci., 1898, 18.

A few Black-bellied Plover were seen by Mr. Frazar at San José del Cabo, the first (two in number) on October 18, the last on November 9. They were rather common at Loreto and Carmen Island in March, at which season they are also found in small flocks on Santa Margarita Island, according to Mr. Bryant, while Mr. Belding has observed them as late as May 10, at San Quintin Bay.

Although this Plover is said to occur during the entire winter on the coast of California, it is known to migrate as far south as Peru. It breeds in the Arctic regions.

Charadrius dominicus Müll.

American Golden Plover.

Mr. Frazar killed an American Golden Plover at San José del Cabo on October 18, and thinks he saw a few others about the same time. His specimen, a young male (No. 17,656), in fresh autumn plumage, is typical *dominicus*. No form of the Golden Plover is known to have been taken before in any part of Lower California.

C. dominicus has occurred as far south as Chili on the Pacific coast. It is apparently a rare visitor to California, for Dr. Brewer states [1] that Dr. Cooper "has only seen a single specimen, shot near San Francisco by Mr. J. Hepburn." The Golden Plover is confined to the Arctic regions during the season of reproduction.

Aegialitis vocifera (Linn.).

Killdeer.

Aegialitis vociferus Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 306 (Cape St. Lucas).

Oxyechus vociferus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, footnote (Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 351 (s. of lat. 24° 30').

Aegialitis vocifera Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 274 (Cape Region; Cape St. Lucas).

The Killdeer is resident in the Cape Region. Mr. Frazar found it rather rare at La Paz in winter, but it was abundant about San José del Cabo through September, its numbers decreasing rapidly after October 1. On top of the Sierra de la Laguna some ten pairs were nesting early in May, and a few birds lingering as late as November 28. Throughout the northern and central portions of the Peninsula it is said to be common and very generally distributed. On San Pedro Martir it has been observed by Mr. Anthony as high as 9,000 feet altitude.

[1] Baird, Brewer, and Ridgway, Water Birds N. Amer., I. 1884, 143.

This species visits various parts of northern South America in winter, and a few birds are supposed to breed in northern Mexico, but the majority doubtless nest north of the southern boundary of the United States.

Aegialitis semipalmata (Bonap.).

Semipalmated Plover.

Aegialitis semipalmata Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (s. of lat. 24° 30′). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 274 (near La Paz).

Mr. Frazar found this Plover common at La Paz in February, at Carmen Island in March, and at San José del Cabo from August 23 to the latter part of October. Mr. Belding notes it as "moderately common" south of latitude 24° 30′, and Mr. Bryant saw a flock of seven at Magdalena Bay on March 12, 1889, while Mr. Anthony reports it common at San Quintin Bay.

The Semipalmated Plover breeds in the Arctic and Subarctic regions, and on the west coast of America migrates as far south as Peru and Chili.

Aegialitis nivosa Cass.

Snowy Plover.

Aegialitis alexandrinus nivosus Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

Aegialitis nivosa Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 274 (Cape Region).

The numerous autumnal specimens of the Snowy Plover collected by Mr. Frazar show surprisingly little variation except in respect to size. The adult males are quite as ashy above as the young birds, from which they can be distinguished, however, by the much darker bars on the sides of their breasts and by the presence of a few black feathers on that part of the forehead occupied by a conspicuous black band in breeding males.

Mr. Frazar saw a small flock of Snowy Plover in March on the island of San José. He afterwards found them at San José del Cabo where they were common during September, October, and the first half of November, occurring usually in flocks of not more than six or eight birds, although fully thirty were seen together on one occasion. They were very tame, but when pursued attempted to elude observation by squatting in holes or depressions. At one time all the birds of the large flock just mentioned concealed themselves in footprints left by horses in the sand of the beach, showing only their heads above the level of the surrounding surface.

Mr. Belding makes only a nominal mention of this species in his papers relating to the Cape Region. To the northward Mr. Bryant has found it common

in March on Santa Margarita Island, and it has been reported from Santa Rosalia Bay. On the Pacific coast the Snowy Plover is found from California to northern Chili, "and there is no evidence that it is a migratory bird in any part of its range."[1]

Aegialitis wilsonia (Ord).

Wilson's Plover.

Ochthodromus wilsonius Belding, Proc. U. S. Nat. Mus., V. 1883, 545 (Cape Region).

Aegialitis wilsonia Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 275 (Cape Region).

My Lower California specimens of Wilson's Plover have considerably less white on the forehead and sides of the head than do the birds from the eastern United States. In the latter the forehead and superciliary stripes are pure white and the lores often whitish. In the former the lores are always dusky, the superciliary stripe is usually narrow and sometimes indistinct, and the white of the forehead often more or less mixed with gray. The upper parts are a shade darker, and in the female the pectoral band is somewhat broader and duskier. In some of these respects the Lower California birds resemble Mr. Ridgway's well marked form *rufinucha*, or rather, to be more precise, they have even less white about the head than has that subspecies. In respect to the amount and depth of the rufous on the head and neck, however, they do not differ from typical *wilsonia*, to which, I think, they may best be referred.[2]

Mr. Frazar found Wilson's Plover "common at La Paz in February and at Carmen Island early in March." His collection also includes two specimens from San José del Cabo, taken respectively on October 18 and 22. The former date is referred to in his notes as that of the "arrival" of the species. In another connection he characterizes it as a "winter resident only." If it does not breed near Cape St. Lucas the question at once arises where the birds which occur there in winter come from, for none have been reported from any locality in the central or northern portions of the Peninsula. Mr. Seebohm says[3] that *A. wilsonia* breeds "as far north as California," but no authority is given for this statement. Baird, Brewer, and Ridgway limit[4] its northward range on the Pacific coast to Cape St. Lucas. Southward it occurs on the western shores of Mexico, Central America, and South America to the extreme northern part of Peru. Throughout this range it is said to breed wherever found.

[1] Seebohm, Geogr. Distr. Charadriidae, 1888, 172.

[2] Since writing the above I find that Mr. Ridgway has called attention to some of these peculiarities as illustrated by specimens from Mazatlan and Cape St. Lucas in the collection of the National Museum (Baird, Brewer, and Ridgway, Water Birds, N. Amer., I. 1884, 169).

[3] Geogr. Distr. Charadriidae, 1888, 155.

[4] *Loc. cit.*, 168.

Arenaria morinella (Linn.).

Ruddy Turnstone.

All of the six Turnstones collected in Lower California by Mr. Frazar appear to be *morinella*. At least they are not larger than the birds found in eastern America, nor, so far as I can see, unlike them in respect to color or markings. No one of them is in fully mature plumage, even the two specimens which were taken in March being closely similar in coloring to the four young birds killed the following autumn. According to Dr. Palmer,[1] however, it is not difficult to distinguish immature specimens of *morinella* from those of *interpres*.

This Turnstone, now for the first time reported from the Cape Region, was found by Mr. Frazar at Carmen Island and San José del Cabo. At the former place it was common on March 12; at the latter a few were seen at various dates between August 31 and October 21. The collection includes specimens from both of these localities. Mr. Anthony has observed Turnstones belonging either to this form or to *interpres* in April, at San Ysidro, and Mr. Bryant has met with others, in February and March, 1888, on Magdalena Island and in March, 1889, on Santa Margarita Island. On the latter island Mr. Bryant has also found *Arenaria melanocephala*, a species which doubtless occasionally visits the Cape Region.

A. morinella is said to occur throughout "America from the Arctic regions north of Hudson Bay and westward to the Mackenzie River, along the Atlantic watershed, though generally coastwise, to Patagonia and the Falkland Islands." It "breeds about Hudson Bay, northward and eastward," and is at all seasons "rare on the Pacific slope." *A. interpres* ranges over the greater part of the Old World and breeds in Alaska and from Japan "westward around to the more northern British islands, Azores (?), and Greenland."[2]

Haematopus frazari Brewst.

Frazar's Oyster-catcher.

Haematopus palliatus (not of Temminck) Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (La Paz).

Haematopus frazari Brewster, Auk, V. 1888, 84, 85 (orig. descr.; type from Carmen Island). A. O. U. Comm., Suppl. to Check List, 1889, 7; Check List, abridged ed., 1889, and 2d ed., 1895, no. 286.1. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 275, 276 (La Paz, etc.). Townsend, Proc. U. S. Nat.

[1] Fur Seals and Fur Seal Islands N. Pacific Oc., pt. III. 1899, 408–418.

[2] Palmer, *Loc. cit.*, 408.

Mus., XIII. 1890, 138 (Concepcion Bay). Coues, Key N. Amer. Birds, 4th ed., 1894, 904, 905 (descr.; Lower Calif.). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 588 (descr.; Lower Calif., both coasts). Sharpe, Cat. Birds Brit. Mus., XXIV. 1896, 117 (descr.; Carmen Island), 730.

Haematopus fraseri (err. typ.), Elliot, N. Amer. Shore Birds, 1895, 210, 211, pl. 72 (descr.; habits; crit.; Gulf of Calif., n. of La Paz).

H.[aematopus] frazeri (err. typ.), Elliot, *Loc. cit.*, 252 (key to species).

[*Haematopus*] *frazari* Sharpe, Hand-list, I. 1899, 147.

Mr. Belding's statement that *H. palliatus* is "of occasional occurrence on the mud flats at La Paz" undoubtedly relates to this species, although the latter was found by Mr. Frazar only on the sandy islands and shores of the Gulf to the northward of the place just mentioned. It was particularly common on Carmen Island early in March, when all the birds seen were paired and evidently about to breed. There is a specimen in the National Museum which was taken by Mr. Belding at the Coronados Islands off the Pacific coast of Lower California "about twenty miles south and west of San Diego."

Mr. Bryant found *H. frazari* "tolerably common at Magdalena Bay and northward, and on Santa Margarita Island. They were mated in January. They were rather shy, running rapidly on the beach, and if approached, taking wing with loud, clear, whistling notes, and after flying some distance, alighting again at the water's edge. Their food was chiefly small bivalves found in the gravelly beach. Two birds were obtained, of one fragments only were saved."

It is a curious fact that *H. palliatus* is represented in the collection of the National Museum by apparently typical specimens from the western coasts of Mexico, Tehuantepec, Peru, and Chili, and that *H. frazari*, which is most closely allied to the Galapagos species (*H. galapagensis*), is known only from Lower California.

Haematopus bachmani Aud.

Black Oyster-catcher.

Haematopus bachmani Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 276 (La Paz).

Of this Oyster-catcher Mr. Bryant says: "A few were seen on Los Coronados Islands by Mr. Belding, also at San Quintin Bay and La Paz. Mr. Anthony has found them more common on the northwest coast than the preceding species [*H. frazari*]." The mention of La Paz in the above quotation constitutes, apparently, the only record of the occurrence of the bird in the Cape Region, which probably represents the extreme limit of its range southward. To the northward it is found nearly everywhere along the Pacific coast from California to the Aleutian Islands.

Lophortyx californicus vallicola (Ridgw.).

Valley Partridge.

Lophortyx californica (not *Tetrao californicus* Shaw) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region), 547 (Pichalinque Bay).

Lophortyx californicus (not *Tetrao californicus* Shaw) Baird, *l. c.*, 305 (Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 482, part (breeding at Cape St. Lucas).

Callipepla californica vallicola Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 276 (Cape Region; Pichalinque Bay). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 136 (Cape St. Lucas). Bendire, Life Hist. N. Amer Birds, pt. I. 1892, 29 (descr. eggs from Cape St. Lucas).

The specimens collected by Mr. Frazar are slightly paler than my examples from California, and their bills average a little heavier, but these differences are neither well marked nor constant.

The Valley Partridge is very common, and of course resident, throughout the low country of the Cape Region. Mr. Frazar found it in the greatest numbers at Triunfo and San José del Rancho. About La Paz it was not numerous, and none were seen on the Sierra de la Laguna. The latter fact is somewhat remarkable, for on San Pedro Martir, in the northern part of Lower California, Mr. Anthony has met with large flocks at an altitude of 8,200 feet. Mr. Bryant mentions a nest containing thirteen eggs found at Calmalli on April 13, 1889. The bird is apparently generally distributed over the entire Peninsula, excepting, as just stated, on the high mountains south of La Paz. It also occurs in the interior of California, being replaced in the coast districts of that State by the typical form, *L. californicus*. Mr. Ridgway informs me that he was mistaken in stating (Proc. U. S. Nat. Mus., V. 1883, 533) that the Plumed Quail (*Oreortyx pictus plumiferus*) had been taken by Mr. Xantus at Cape St. Lucas, and that he knows of no good evidence to show that it has ever occurred in the Cape Region.

Columba fasciata vioscae Brewst.

Viosca's Pigeon.

Columba flavirostris Cooper, Orn. Cal., 1870, 508, part (Cape St. Lucas). Coues, Check List, 1873, 73, no. 368, part.

[*Columba*] *flavirostris* Coues, Key N. Amer. Birds, 1872, 225, part (Cape St. Lucas).

Columba fasciata (not of Say) Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 40, no. 456, part; Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas; Miraflores). Coues, Check List, 2d ed., 1882, 91, no. 539, part. Belding, Proc. U. S. Nat. Mus., VI. 1883, 350 (Victoria Mts.). A. O. U., Check List, 1886, 178, 179, no. 312, part.

Columba fasciata vioscae BREWSTER, Auk, V. 1888, 86 (orig. descr.; type from La Laguna). A. O. U. COMM., Suppl. to Check List, 1889, 8; Check List, abridged ed., 1889, and 2d ed., 1895, no. 312 a. BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 277 (Cape St. Lucas; Miraflores; Victoria Mts.); Zoe, II. 1891, 198 (Victoria Mts.). BENDIRE, Life Hist. N. Amer. Birds, pt. I. 1892, 127, 128, pl. 3, fig. 18 (descr. nest and egg from near Pierce's Ranch, Lower Calif.). COUES, Key N. Amer. Birds, 4th ed., 1894, 904 (descr.; Lower Calif.). RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 591 (descr.; s. portions of Lower Calif.).

Columba vioscae SALVADORI, Cat. Birds Brit. Mus., XXI. 1893, 293, 294 (quotes orig. descr.; San José del Rancho; Lower Calif.).

[*Columba*] *vioscae* SHARPE, Hand-list, I. 1899, 70.

This Pigeon seems to be strictly confined to the Cape Region, for neither Mr. Bryant nor Mr. Anthony has succeeded in finding it in the central or northern portions of the Peninsula where true *fasciata* is also apparently wanting.

On reaching the summit of the Sierra de la Laguna, on April 26, 1887, Mr. Frazar saw his first Viosca's Pigeons. At this date they were not numerous, nor did they become so until May 15, when they began cooing. During the latter part of May they were abundant, although still in flocks, some of which contained upwards of fifty birds each. They continued to increase in numbers up to the date of Mr. Frazar's departure — June 9. A female taken on June 3 had apparently laid one egg and was certainly about to lay another. This was the only instance of breeding noted here. The people living in the neighborhood asserted that eggs were seldom found before August, and that the number in a nest varies from one to two.

At San José del Rancho Viosca's Pigeons were numerous in July, feeding greedily on wild grapes, which were ripe by the 5th of the month. The owner of this ranch said that the birds had first appeared there about the middle of May. They apparently did not begin breeding until the middle of July, when a nest containing one egg was reported by a hunter. Mr. Frazar visited this nest on July 22 and found it empty, but a broken egg was lying on the ground beneath. On the 27th a perfect egg was taken from the oviduct of a bird. By the last of July most of the Pigeons had left the neighborhood, "owing probably to the grapes having gone by."

At San José del Cabo large flocks were observed in September passing southward. Mr. Frazar believes that the majority left Lower California that season before winter set in, although he saw a few on November 15 along the road between San José and Miraflores and others at San José del Rancho, December 18–25. None were found on the Sierra de la Laguna between November 27 and December 2.

The note of this Pigeon seemed to Mr. Frazar "more the *hoo* of an Owl than the *coo* of a Dove. It is given twice, and is low and deep in tone. The birds fly in compact flocks but not as swiftly as the White-winged Doves."

Mr. Belding found[1] Viosca's Pigeon "abundant and breeding in February"

[1] *Loc. cit.*

in the "Victoria Mountains," but gives no definite localities. "Several nests were seen in oak trees, but not closely examined, however, they were so frail, twigs alone having been used in their construction. The eggs could be seen by looking through them from below. Their flesh was here excellent, notwithstanding they were subsisting principally upon the acorns of the deciduous oak (*Quercus grisea*).".

From this we must infer either that the eggs are laid at widely different dates at different localities or in different years, or that the nesting season extends over a period of more than six months in each year. The latter supposition seems the more reasonable in view of the fact that the breeding season of the Ground Dove in the Cape Region is known to cover fully half the year. The apparent migration of Viosca's Pigeons witnessed by Mr. Frazar was probably exceptional and due to a failure of the usual food supply.

The eggs taken by Mr. Frazar measure respectively: 1.53 × 1.09 and 1.48 × 1.04. They are elliptical ovate in shape, with rather rough, granulated shells of a dead, chalky white color.

Zenaidura macroura (Linn.).

Mourning Dove. Carolina Dove.

Zenaidura carolinensis Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).
Zenaidura macroura Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 277 (Cape Region).
Mourning Dove Bryant, Zoe, II. 1891, 189 (San José del Cabo).

Mr. Frazar found Carolina Doves abundant on the Sierra de la Laguna in early May, when they were apparently migrating, for all had left the mountain before the end of the month. They were also seen in large numbers on August 23 about half way between Miraflores and San José del Cabo, and at the latter place they occurred sparingly during September. On December 3 a single bird was observed on the Sierra de la Laguna just below the lower limits of the pine belt, and the species was common at Triunfo during the last week of December. None were met with near La Paz, where, however, Mr. Belding found them "very abundant" in the winter of 1881–1882. Their presence or absence in any given locality at the latter season is doubtless determined chiefly if not wholly by the food supply.

In the central portions of Lower California, the Mourning Dove, according to Mr. Bryant, is common in March, but less so in April; still further northward Mr. Anthony has seen it in spring and autumn "from the coast to an altitude of 8,200 feet on La Grulla, but not very common anywhere" (Bryant) and at various seasons near San Fernando where it is nowhere abundant.[1] The only definite proof of its breeding on the Peninsula seems to be that furnished

[1] Anthony, Auk, XII. 1895, 137.

by Mr. Bryant's record of a nest containing two fresh eggs found at Comondu on April 15.

On the Pacific slope the Carolina Dove ranges from British Columbia to Panama.

Melopelia leucoptera (Linn.).

White-winged Dove.

Melopelia leucoptera Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 305 (Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 378 (breeding at Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 883, 544 (Cape Region); VI. 1883, 350 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 277 (Cape Region; Victoria Mts.).

White-winged Dove Bryant, Zoe, II. 1891, 189 (San José del Cabo).

This Dove is abundant at all seasons over the entire Peninsula south of La Paz, breeding at every altitude from the sea-coast to the tops of the highest mountains. To the northward it extends at least as far as San Fernando (about latitude 30°), where, according to Mr. Anthony, it is rather common (Bryant). Mr. Frazar took fresh eggs at La Paz on March 24, and at Triunfo in April and again in June. On the Sierra de la Laguna the birds were mated in May, but apparently had not begun nesting at the date of Mr. Frazar's departure (June 9). A few were seen on the summit of this mountain in December.

The White-winged Dove occurs on or near the Pacific coast from Lower California and Arizona to Costa Rica.

Columbigallina passerina pallescens (Baird).

Mexican Ground Dove.

Chamaepelia var. *pallescens* Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas).

Chamaepelia passerina ? var. *pallescens* Baird, *Loc. cit.*, 305 (orig. descr.; types from Cape St. Lucas).

Chamaepelia passerina (not *Columba passerina* Linnaeus) Baird, Rept. Pac. R. R. Surv., IX. 1858, 606, 607 (La Paz, W. Hutton). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 392, part (breeding at Cape St. Lucas from April 15 to Aug. 29).

Chamaepelia passerina, var. *pallescens* Cooper, Orn. Cal., 1870, 517, 518 (descr.; Cape St. Lucas).

Chamaepelia passerina pallescens Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).

Columbigallina passerina pallescens Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 278 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape

St. Lucas). Bryant, Zoe, II. 1891, 188, 189 (San José del Cabo). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 150 (eggs taken near Cape St. Lucas by Xantus and at San José del Cabo by Belding).

This little Dove is resident in the Cape Region, where it appears to be quite as numerous and almost as widely distributed as the White-winged Dove. It is apparently uncommon among the higher mountains, however, for Mr. Frazar saw only one or two on the Sierra de la Laguna in spring and none during his visit in December. He met with it in the greatest numbers at San José del Cabo, where a nest containing two fresh eggs was found as late as October 18. As it was breeding at La Paz early in February and at most of the places visited during the spring and summer there would seem to be only three months in the year which are not included in its season of reproduction. A nest taken at Pierce's Ranch on July 19 was nearly flat, about four inches in width across the top, and composed chiefly of weed stalks. The two eggs which it contained are dead white in color and measure respectively: .86 × .64 and .82 × .64.

The Mexican Ground Dove is apparently not at all common in the parts of the Peninsula which Mr. Bryant visited, but more were seen about Comondu than elsewhere. The only specimen observed "on Santa Margarita Island was taken January 26, 1888, when it came to a tank for water."

The range of this Ground Dove extends along the Pacific coast from Lower California to Central America. The bird is also said to occur casually in California.

Cathartes aura (Linn.).

Turkey Vulture.

Cathartes aura Belding, Proc U. S. Nat. Mus., V. 1883, 544 (Cape Region), 548 (San José); VI. 1883, 350 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 278 (Cape Region).

Although no mention of the Turkey Vulture occurs in any of the papers relating to Xantus's experience, the bird at this day is found at all seasons throughout the southern extremity of Lower California, where, as well as nearly everywhere in the central and northern portions of the Peninsula, it is an abundant and familiar species.

"They were common in Magdalena Island, frequenting the beach where cattle and turtles were slaughtered. On Santa Margarita Island I counted twenty, early one morning, perched on the tops of the giant cacti. The offal from a turtle killed at midday attracted fourteen buzzards in less than three hours. During an exceedingly hot day I saw a number of them gathered about a water-hole at Pozo Grande. Mr. Anthony says that they range in summer from sea-level to an altitude of 11,000 feet, but are confined to the sea-coast and lower hills in winter" (Bryant).

The single skin preserved by Mr. Frazar does not differ in any respect from more eastern and northern specimens.

The Turkey Vulture occurs along the Pacific coast from British Columbia to Patagonia.

Circus hudsonius (Linn.).

Marsh Hawk.

Circus hudsonius Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 278 (Cape Region).

The Marsh Hawk apparently occurs in this region only in the character of a winter visitor, but it has been found breeding by Mr. Anthony at Cape Colnett and San Ramon in the northern part of the Peninsula. At San José del Cabo Mr. Frazar noted its arrival in autumn on September 5. It soon became common and continued so during October and November. During the latter month it was seen at Santiago, and early in December on the Sierra de la Laguna. At San José del Cabo Mr. Frazar found one of these Hawks devouring a Coot (Fulica) which it had evidently just captured, for the poor victim proved, on examination, to be still living.

The Marsh Hawk ranges south in winter to Panama and breeds from the southern border of the United States northward.

Accipiter velox (Wils.).

Sharp-shinned Hawk.

Accipiter fuscus Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region).
Accipiter velox Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 279 (Cape Region).

Of this species Mr. Frazar collected three representatives, two males and one female, all old birds in fine plumage. I am unable to find any differences whatever between these and eastern specimens.

Mr. Belding characterizes the Sharp-shinned Hawk as rare, but it was seen by Mr. Frazar on a number of occasions and at various places, from the sea-beach at San José del Cabo to the summit of the Sierra de la Laguna, the earliest date in autumn being October 31, the latest in spring some time in March. "Mr. Anthony gives it as resident of the region north of San Fernando [about latitude 30°], ranging as high as 4,000 feet altitude" (Bryant). Its general range extends as far south as the Isthmus of Panama and northward into Alaska.

Accipiter cooperii (Bonap.).

Cooper's Hawk.

Accipiter cooperi Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas; San Nicolas). Belding, *Ibid.*, VI. 1883, 351 (La Paz and s.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 279 (Cape St. Lucas; La Paz).

The collection contains two specimens of this Hawk, a male and female, both immature. They belong to the dark, heavily streaked form that has been called *A. mexicanus*.

Cooper's Hawk was found by Mr. Frazar at much the same seasons and places as *A. velox*. It was commoner, however, and apparently less strictly a winter visitor, for it was seen at San José del Cabo as early as October 14 and on the Sierra de la Laguna as late as May 9, when a male in immature plumage was taken.

In the northern portions of the Peninsula Mr. Anthony has found Cooper's Hawk "common as high as 4,000 feet altitude until late in the spring," but he does not remember to have "seen it after the last of May" (Bryant). It breeds in California and northward into British Columbia and migrates southward to southern Mexico.

Parabuteo unicinctus harrisi (Aud.).

Harris's Hawk.

Parabuteo unicinctus harrisi Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (San José to Miraflores), 548 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 279 (San José del Cabo to Miraflores). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 204 (San José del Cabo to Miraflores).

Harris's Hawk is apparently resident in the Cape Region. Mr. Belding met with it frequently along the road from San José del Cabo to Miraflores and noted it as common at the former place on May 17, 1882. Mr. Frazar found it most numerously at Triunfo; he saw very few at San José del Cabo and none on the Sierra de la Laguna. About La Paz it was decidedly rare. While staying at the house of Mr. Viosca, the American Consul at La Paz, Mr. Frazar had an interesting experience with a bird of this species. It came into the yard — which was filled with trees and bounded on three sides by buildings, on the fourth side by a fence, the total space enclosed being about thirty yards square — and began splashing about in an oval water tank, making frantic attempts to catch some of the numerous gold fish confined therein. The fish, however, concealed themselves among the rocks on the bottom, and the Hawk was shot before it had done any damage. Its plumage was thoroughly water-

soaked, its body very thin, indicating that it had been made desperate by starvation.

Mr. Belding has seen Harris's Hawk about forty miles south of San Diego, California, and hence very near the northern boundary of the Peninsula. Mr. Bryant has observed it at San Jorge, near San Juan, and at San Gregoria. At the place last named he found a nest on April 6, 1889, built in the top of a bush (*Atamisquea emarginata*) and containing two eggs, "one of them quite fresh, the other with a small embryo."[1]

Mr. Anthony states that a few birds of this species nested in 1894 near San Fernando, "in cirios between the mine and the beach,"[2] and that during the previous year others were seen in valleys "between Ensenada and Colnett, and in one or two places on San Pedro [Martir] as high as 7000 feet."[3]

The general range of Harris's Hawk on or near the Pacific coast extends from northern Lower California to Panama.

Buteo borealis calurus (Cass.).

Western Red-tail.

B.[uteo] lucasanus Ridgway, in Coues, Key N. Amer. Birds, 1872, 216 (nominal mention only under *B. borealis;* Cape St. Lucas).

[*Buteo borealis*] var. *lucasanus* Ridgway, in Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 258 (key to species), 285, 286 (orig. descr.; type from Cape St. Lucas).

Buteo borealis calurus Belding, Proc. U. S. Nat. Mus., V. 1883, 544 (Cape Region); VI. 1883, 350 (Victoria Mts.). Ridgway, *Ibid.*, V. 1883, 544 (crit.; Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 280 (Cape Region).

Buteo borealis lucasanus Bryant, *Loc. cit.* (name only). Palmer, Auk, XIII. 1896, 342 (note on proper citation). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 217 (crit.; Cape St. Lucas).

Buteo borealis Godman and Sharpe, Biol. Centr.-Amer., Aves, III. 1900, 63, 64, part (crit.; Cape St. Lucas).

The determination of the Red-tailed Hawks collected by Mr. Frazar in Lower California has proved somewhat difficult, for they vary exceedingly in color and markings. In fact I found it impossible to come to any satisfactory conclusion regarding them until, thanks to the kindness of Mr. Ridgway and Dr. Allen, I was able to compare them with the material in the U. S. National Museum and in the American Museum of New York. This includes the type of *Buteo borealis lucasanus* as well as four other specimens referred to that form by Mr. Ridgway; three specimens each, including the types, of *Buteo borealis socorroensis* and *B. b. costaricensis;* and a superb series of *B. b. calurus*,

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 279, 280.

[2] Auk, XII. 1895, 137.

[3] Zoe, IV. 1893, 233.

containing a considerable number of specimens taken in Arizona by Dr. Mearns and now belonging to the American Museum. In addition my own collection has supplied some thirteen specimens of *calurus* from various parts of the western United States.

On examining Mr. Frazar's birds, twenty-eight in number, in connection with this material I have become convinced that so far as color and markings are concerned they cannot be separated from *calurus*, for every one of them may be closely matched by one or more of the specimens from Arizona, Colorado, or California; while even as series the birds of the two regions show no obvious differences except in size, those from the United States averaging slightly larger than those obtained in Lower California by Mr. Frazar.

Buteo borealis var. *lucasanus* was originally described by Mr. Ridgway [1] as differing from *B. calurus* in having "the upper parts more uniformly blackish, and the upper tail-coverts and tail uniform rufous, the latter without a trace of a black bar." [2]

On examining the tail of the specimen (No. 16,925 Smith. Cat., Cape St. Lucas, Sept. 15, 1859; J. Xantus) from which this description was taken I find, however, very decided indications of a dark subterminal band. This is represented by a transverse series of short, narrow, blackish bars more or less broken and confused, mainly confined to the inner webs of the feathers and in no instance continuous across both webs. The black is rather faint on most of the feathers, but on some of the inner ones is perfectly distinct, and on one of them is really sharply defined and very conspicuous, forming a solid bar, .15 of an inch in width, which extends from the shaft of the feather three quarters of the distance across its inner web. Of the outer pair of feathers one is apparently without any dark color near its tip, but both, as well as all the other rectrices, have a varying number of rather large black spots on one or both webs near the shafts, towards their bases. The tail of the type specimen (No. 17,212 Smith. Cat., San Nicolas, Oct. 1859; J. Xantus) lacks all trace of these basal spots and at first glance appears to be perfectly plain towards the tip, also, but close inspection under a strong light reveals innumerable minute, dusky spots which, when the tail is spread, prove to be arranged in a regular transverse series forming a faint, but unmistakable subterminal band. The other three specimens labeled by Mr. Ridgway as *B. lucasanus* are immature and do not differ from *calurus* in corresponding plumage.

The majority of Mr. Frazar's birds possess tail-bands quite as well-defined and conspicuous as in typical *calurus*, but in several of them the black is more or less broken and indistinct while at least two have the band scarce better marked than in the Smithsonian specimen, No. 16,925. With this specimen

[1] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 285.

[2] In the Manual N. Amer. Birds, 2d ed., 1896, 233 Mr. Ridgway apparently abandons all of these characters except that of the color of the tail. In another connection (Proc. U. S. Nat. Mus., V. 1883, 544) he has expressed doubts as to whether the "principal character assigned to '*lucasanus*' (the uniform rufous tail without subterminal black bar) will prove constant, even in birds from the cape."

they furnish a nicely graduated series connecting those most heavily barred with the nearly plain-tailed type of *lucasanus*. As the Arizona specimens of *calurus* show quite as wide a range of variation with respect to the tail markings as do Mr. Frazar's birds, and as none of the other characters originally ascribed to *lucasanus* prove more satisfactory or constant, it is evident that the type of this supposed subspecies represents a mere accidental or extreme variation of a form which, as already stated, does not normally differ in either color or markings from *Buteo borealis calurus* of the western United States. In other words, all the Red-tailed Hawks thus far found in the St. Lucas Region are one and the same thing, and if they are to be separated from *calurus* — in which case they must bear the name *lucasanus* — it must be by size alone. The difference in this respect is so trifling that I cannot think it worth special recognition.

None of the Lower California or Arizona specimens resemble at all closely *B. b. socorroensis*, but I have two adult birds (No. 26,206, Jan. 8, 1887 and No. 26,207 Feb. 16, 1888) taken at Nicasio, California, by Mr. C. A. Allen, which differ from this form, as represented by the three U. S. Nat. Museum examples before me, only in having somewhat more black on the jugulum and throat and in being slightly larger. Another specimen (No. 24,780) in my collection from Alamos, western Mexico, is generally similar, but has more black spotting on the abdomen, and the breast and thighs are deeper colored. I see no alternative but to refer both this and the two Nicasio specimens to *socorroensis*. Such reference need not be prejudicial to the subspecific standing of the latter, for there is no reason why this bird, even if confined to Socorro Island during the breeding season, should not wander, at other times of the year, as far as Alamos, or even Nicasio.

B. costaricensis differs so very widely in coloring from any of the phases of *calurus* as not to require comparison in this connection.

In the following tables of measurements no birds not fully adult (*i. e.* red-tailed) are included: —

Buteo borealis socorroensis Ridgw.

No.	Sex	Locality	Date	Wing	Tail	Tarsus	Middle Toe	Culmen from Base	Culmen from Feathers	Culmen from Nostril	Depth of Bill at Nostril
117,499[1]	♂	Socorro Isl., Mex.	Mar. 8, '89	15.70	8.63	3.50	1.65	1.56	1.33	.85	.78
50,761[1]	♂	" " "	— — —	14.94	8.47	3.54	1.67	1.42	1.32	.85	.77
26,207[2]	♂	Nicasio, Cal.	Feb. 16, '88	16.72	9.20	3.73	1.70	1.56	1.34	.91	.72
24,780[2]	♂	Alamos, Mex.	Mar. 8, '88	16.31	9.06	3.67	1.67	1.55	1.26	.90	.80
26,206[2]	♂	Nicasio, Cal.	Jan. 8, '87	16.02	8.90	3.54	1.70	1.70	1.38	.92	.77
			Average,	15.94−	8.85+	3.59+	1.68−	1.56−	1.33−	.89−	.77−
117,500[1]	♀	Socorro Isl., Mex.	Mar. 8, '89	16.76	9.53	3.80	1.95	1.73	1.43	1.03	.90

[1] Collection U. S. Nat. Museum. Type, 50,761.
[2] Collection William Brewster.

Buteo borealis lucasanus Ridgw.

No.	Sex	Locality	Date	Wing	Tail	Tarsus	Middle Toe	Culmen from Base	Culmen from Feathers	Culmen from Nostril	Depth of Bill at Nostril
		Lower California.									
17,843[1]	♂	Sierra de la Laguna	Nov. 29, '87	15.90	8.97	3.52	1.60	1.50	1.35	.90	.70
17,841[1]	♂	" " " "	May 28, '87	15.25	8.70	3.47	1.45	1.46	1.31	.87	.72
17,844[1]	♂	" " " "	Dec. 2, '87	15.14	8.35	3.38	1.70	1.50	1.35	.91	.72
17,840[1]	♂	" " " "	May 17, '87	15.06	8.46	3.32	1.67	1.45	1.32	.91	.70
17,842[1]	♂	" " " "	May 28, '87	15.01	8.48	3.47	1.59	1.43	1.30	.90	.72
17,839[1]	♂	" " " "	Apr. 27, '87	14.82	8.48	3.33	1.50	1.43	1.30	.86	.69
17,831[1]	♂	Santiago	Nov. 17, '87	16.08	9.32	3.52	1.76	1.50	1.26	.86	.75
17,832[1]	♂	Santiago	Nov. 24, '87	15.20	9.18	3.39	1.74	1.45	1.31	.85	.72
17,824[1]	♂	San José del Cabo	Nov. 3, '87	15.63	8.63	3.42	1.73	1.45	1.34	.91	.77
17,826[1]	♂	La Paz	Feb. 18, '87	15.27	8.21	3.54	1.77	1.47	1.34	.83	.72
17,825[1]	♂	La Paz	Feb. 9, '87	14.83	8 25	3.30	1.66	1.47	1.30	.87	.73
17,212[2]	♂	San Nicolas	Oct. —, '59	16.24	8.81	3.78	1.79	1.65	1.35	.98	.80
16,925[2]	♂	Cape St. Lucas	Sept. 15, '59	15.78	9.10	3.75	1.78	1.67	1.38	1.00	.83
			Average,	15.40+	8.69−	3.47−	1.67+	1.49+	1.32+	.90−	.74−
17,835[1]	♀	Santiago	Nov. 19, '87	16.93	10.03	3.25	1.81	1.70	1.40	.98	.77
17,837[1]	♀	Santiago	Nov. 26, '87	16.79	9.94	3.62	1.75	1.62	1.37	.99	.79
17,833[1]	♀	Santiago	Nov. 16, '87	16.35	9.52	3.87	1.90	1.65	1.48	1.02	.83
17,822[1]	♀	San José del Cabo	Nov. 3, '87	16.41	9.03	3.57	1.85	1.64	1.52	1.05	.77
17,823[1]	♀	San José del Cabo	Nov. 11, '87	16.20	9.32	3.79	1.75	1.67	1.52	.95	.78
17,827[1]	♀	La Paz	Feb. 9, '87	16.06	8.63	3.30	1.74	1.52	1.30	.93	.72
17,828[1]	♀	La Paz	Feb. 24, '87	15.52	8.82	3.33	1.77	1.62	1.42	.91	73
17,829[1]	♀	Triunfo	June 21, '87	15.90	8.79	3.32	1.72	1.56	1.45	.95	.75
			Average	16.27	9.26	3.51−	1.79−	1.62+	1.43+	.97+	.77−

Buteo borealis calurus (Cass.).

No.	Sex	Locality	Date	Wing	Tail	Tarsus	Middle Toe	Culmen from Base	Culmen from Feathers	Culmen from Nostril	Depth of Bill at Nostril
		Arizona.									
51,582[3]	♂	Fort Verde	Jan. 16, '87	16.06	9.07	3.58	1.81	1.54	1.36	.93	.73
51,584[3]	♂	" "	Mar. 31, '87	15.90	9.17	3.68	1.75	1.60	1.35	.94	.80
51,571[3]	♂	" "	Mar. 12, '86	15.75	8.97	3.33	1.60	1.52	1.35	.93	.80
51,577[3]	♂	" "	Dec. 13, '86	15.52	9.25	3.55	1.62	1 45	1.36	.92	.75
51,573[3]	♂	" "	Dec. 1, '86	15.45	8.61	3.70	1.62	1.48	1.24	.87	.73
51,590[3]	♂	Payson	Feb. 10, '88	16.05	9.15	3 68	1.70	1.52	1.35	.85	.75
51,580[3]	♂	Oak Creek	Jan. 6, '87	15.63	8.77	3 51	1.72	1.50	1.30	.85	.75
51,555[3]	♂	Ash Creek	Sept. 25, '84	15.62	9.92	3.70	1.67	1.52	1.36	.89	.80
51,556[3]	♂	Pine Springs	Nov. 17, '84	15.52	8.76	3.43	1.58	1.47	1.32	.90	.76
			Average,	15.72+	9.07+	3.57+	1.67+	1.51+	1.33+	.90−	.76+

[1] Collection William Brewster.

[2] Collection U. S. Nat. Museum. Type, 17,212.

[3] Collection Amer. Mus. Nat. Hist.

No.	Sex	Locality	Date	Wing	Tail	Tarsus	Middle Toe	Culmen from Base	Culmen from Feathers	Culmen from Nostril	Depth of Bill at Nostril
		Arizona.									
51,559[1]	♀	Fort Verde	Mar. 14, '85	17.80	9.75	3.62	1.67	1.71	1.44	.98	.78
51,574[1]	♀	" "	Dec. 11, '86	17.04	9.54	3.87	2.02	1.72	1.55	1.10	.85
51,561[1]	♀	" "	Mar. 25, '85	16.85	9.55	3.91	1.83	1.54	1.42	.98	.80
51,583[1]	♀	" "	Mar. 31, '87	16.85	9.53	3.73	1.82	1.65	1.43	.98	.85
51,558[1]	♀	" "	Jan. 10, '85	16.68	9.63	3.85	1.83	1.58	1.35	1.00	.79
51,589[1]	♀	Baker's Butte	July 17, '87	17.19	9.75	3.44	1.76	1.56	1.45	1.00	.80
51,579[1]	♀	Oak Creek	Jan. 6, '87	16.95	9.23	3.87	1.76	1.64	1.40	1.00	.77
51,554[1]	♀	Mogollon Mts.	Oct. 5, '84	16.77	9.75	3.60	1 71	1.50	1.30	.92	.75
51,560[1]	♀	Yarapai Co	Mar. 25, '85	16.68	9.50	3.57	1.83	1.60	1.26	1.00	.78
51,586[1]	♀	Upper Verde Valley	Apr. 16, '87	16.28	9.46	3.76	1.82	1.62	1.42	.96	.82
			Average,	16.91−	9.57−	3.72+	1.81−	1.61+	1.40+	.99+	.80−

The Western Red-tailed Hawk is common and very generally distributed throughout the Cape Region. Mr. Frazar found it at all seasons, but most numerously in late autumn, when there is probably an influx of birds which have bred further north. During the last two weeks of November a great many were seen about the lagoon at Santiago, where they were evidently attracted by the Coots (Fulica), on which they were preying. Some of them were very bold and easily shot. One pounced on a Quail (*Lophortyx californicus vallicola*) which Mr. Frazar had just wounded and which lay fluttering on the ground within fifteen yards of the spot where he was standing.

Mr. Bryant saw the Western Red-tail at Santa Margarita Island in January and February, 1888; at Ubi on May 9, 1889; and at San Fernando (no date given). Mr. Anthony says that it is "very common throughout the northern part of the peninsula," and that he found it "nesting in abundance in the pines on San Pedro [Martir]."[2] Its general range along the Pacific slope extends from Alaska southward into Mexico.

Buteo abbreviatus Cab.

Zone-tailed Hawk.

Buteo abbreviatus Belding, Proc. U. S. Nat. Mus, V. 1883, 544 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 280 (Cape Region). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 229 (Cape St. Lucas Region). Godman and Sharpe, Biol. Centr.-Amer., Aves, III. 1900, 60 (nesting near Cape St. Lucas).

Mr. Belding mentions this species as "very rare." Mr. Frazar obtained no specimens, but on four different occasions at San José del Cabo, and once at Santiago he saw "a perfectly black Hawk having a narrow white band across

[1] Collection Amer. Mus. Nat. Hist.

[2] Zoe, IV. 1893, 233.

the middle of the tail, and perhaps some white on the under tail coverts. It flew exactly like a Turkey Buzzard, its wings held at an upward slant." This bird, he thinks, must have been a Zone-tailed Hawk. On April 24, 1889, Mr. Anthony found two pairs nesting on San Pedro Martir, "at elevations of 7000 and 7500 feet," and one of the birds was secured.[1]

B. abbreviatus has occurred in southern California a little north of San Diego, and is common in southern Arizona and thence southward through Mexico and Central America into northern South America.

Archibuteo ferrugineus (Licht.).

Ferruginous Rough-leg.

On November 28 Mr. Frazar obtained two Ferruginous Rough-legs on the summit of the Sierra de la Laguna. One he shot; the other had been killed the day before by a hunter, who claimed to know the bird perfectly well, and who asserted that it occurs regularly on this mountain in winter. Mr. Frazar did not hear of it elsewhere, and it does not seem to have been reported from any other part of the Peninsula, although it is common in California. The Cape Region perhaps represents the extreme southern limit of its wanderings on the Pacific coast.

Haliaeetus leucocephalus (Linn.).

Bald Eagle.

This Eagle must be rare in Lower California, for it has not been previously reported from any part of the Peninsula. Mr. Frazar, however, obtained definite proof not only of its presence, but of its breeding in the Cape Region, for he was shown a young captive bird in the possession of Mr. Viosca, the American Consul at La Paz, which that gentleman assured him had been taken from a nest on Espiritu Santo Island two years before. It was in the brown plumage when first examined (in January, 1887), but eleven months later exhibited some white on the head and tail. Mr. Frazar also saw a nest on the Gulf coast of the Peninsula opposite Carmen Island, which was evidently not an Osprey's, and which the people living in the neighborhood asserted had been occupied for several years by a pair of Eagles.

The Bald Eagle is found throughout California to the extreme southern border of the State. Dr. Brewer states [2] that it ranges as far south as Central America, but gives no specific records of its occurrence south of the southern border of the United States.

[1] Zoe, IV. 1893, 234.

[2] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 329.

Falco mexicanus Schleg.

Prairie Falcon.

Hierofalco mexicanus Belding, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Miraflores; Cape St. Lucas; San José del Cabo).

Falco mexicanus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 281 (Miraflores; Cape St. Lucas; San José del Cabo).

According to Mr. Ridgway, this Falcon was taken by Xantus at "Miraflores November 25; Cape Saint Lucas, December 14; San José del Cabo, December, January." It was not met with by Mr. Belding, nor certainly identified by Mr. Frazar. Mr. Bryant saw a pair about a cliff at Comondu in 1888, a single bird on Santa Margarita Island on March 2, 1889, and "a pair nesting in a high cliff" at San Esteban on April 18, 1889. The Prairie Falcon breeds rather commonly in California and Oregon, and ranges south into Mexico.

Falco peregrinus anatum (Bonap.).

Duck Hawk.

Mr. Frazar, who seems to have been the first to meet with the Duck Hawk in the Cape Region, saw a few birds in February and March at La Paz (where one specimen, an adult female, was obtained) and others, in October and November, at San José del Cabo and Santiago. In the northern part of Lower California the species has been "found nesting in the cliffs along the coast at several places from San Carlos landing to San Quintin by Mr. Anthony, who says they are more common in winter" (Bryant).

The Duck Hawk inhabits the entire continent of America wherever the local conditions are suited to its requirements.

Falco columbarius Linn.

Pigeon Hawk.

Æsalon columbarius Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (La Paz).

Falco columbarius Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 281 (La Paz).

Several Pigeon Hawks were seen in autumn at San José del Cabo and Santiago by Mr. Frazar, the earliest date of observation being September 17, the latest November 17. The collection contains a typical specimen from each of these localities. Mr. Belding has reported the capture of a bird at La Paz in January, 1883. The species was not met with by either Mr. Bryant or Mr. Anthony. It ranges southward in winter to northern South America, and breeds chiefly north of the United States.

Falco columbarius richardsonii (Ridgw.).

Richardson's Merlin.

An adult male Merlin (No. 17,872) in full autumn plumage, taken by Mr. Frazar at San José del Cabo, on October 31, is apparently referable to *richardsonii*, although it is far from typical, being quite as deeply colored as are light specimens of *columbarius*, and, like that species, having the outer webs of the outer two primaries perfectly plain. The remaining primaries, however, are conspicuously spotted on their outer webs, but the markings are bluish gray, of about the same shade as the mantle, instead of nearly white, as in *richardsonii*. The tail has five light and five dark bands, counting the terminal (light) and subterminal (dark) ones. This specimen is almost perfectly matched by another in my collection, of corresponding age and sex, from Larimer County, Colorado. It is difficult to see how such birds can be regarded other than as intermediate, and hence connecting, links between *richardsonii* and *columbarius*. Although Richardson's Merlin is chiefly confined to the interior districts of North America, it has been occasionally taken in California.

Falco sparverius deserticolus Mearns.

Desert Sparrow Hawk.

(?) *Tinnunculus sparverius* (not *Falco sparverius* Linnaeus) Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region); VI. 1883, 350, part (Victoria Mts.)

(?) *Falco sparverius* (not of Linnaeus) Bryant, Proc. Calif. Acad. Sci, 2d ser., II. 1889, 281, part (Cape Region).

Among the Sparrow Hawks sent me from the Cape Region by Mr. Frazar are four females, which are not only much larger than any of the others, but quite equal in size to average specimens of *deserticolus*, to which I refer them without hesitation. Three of these birds were obtained at San José del Cabo on September 17, October 19 and October 31, respectively, while the fourth was taken at Triunfo on December 22. From this we may infer that the form *deserticolus* is of not uncommon occurrence in the Cape Region in autumn and winter. Its general range includes practically the whole of the western United States, and extends from British Columbia to Mazatlan in northwestern Mexico.

Falco sparverius peninsularis Mearns.

St. Lucas Sparrow Hawk.

Tinnunculus sparverius (not *Falco sparverius* Linnaeus) Baird, Cat. N. Amer. Birds, 1859, no. 13, part; Proc. Acad. Nat. Sci. Phila., 1859, 301, 302 (Cape St. Lucas). (?) Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region); VI. 1883, 350, part (Victoria Mts.).

Falco sparverius BAIRD, Rept. Pac. R. R. Surv., IX. 1858, 13, 14, part. COUES, Check List, 1873, 69, no. 346, part; 2d ed., 1882, 87, no. 508, part. BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, III. 1874, 169–171, part. A. O. U., Check List, 1886, 196, no. 360, part. (?) BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 281, 282, part (Cape Region, etc.).

[*Tinnunculus*] *sparverius* GRAY, Hand-list, I. 1869, 23, no. 216, part.

[*Falco*] *sparverius* COUES, Key N. Amer. Birds, 1872, 214, 215, part.

Cerchneis sparveria SHARPE, Cat. Brit. Birds, I. 1874, 437–439, part.

Tinnunculus sparverius RIDGWAY, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 38, no. 420, part.

Falco sparverius peninsularis MEARNS, Auk, IX. 1892, 267 (orig. descr.; type from San José). A. O. U. COMM., Auk, X. 1893, 60, no. 360 b; Check List, 2d ed., 1895, 140, no. 360 b.

F.[*alco*] *sparverius* RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 252, part.

[*Cerchneis*] *peninsularis* SHARPE, Hand-list, I. 1899, 278.

The characters by which Dr. Mearns has proposed to distinguish *Falco sparverius peninsularis* are presented very constantly by twelve of the Sparrow Hawks collected by Mr. Frazar. Among these are an adult male taken at Triunfo on April 20, another in excessively worn breeding plumage shot at San José del Rancho on July 8, and a young male, just from the nest and barely large enough to fly, which was captured at the place last named on July 17. Eight of the remaining specimens were obtained in the Cape Region (at Triunfo, Santiago, or San José del Cabo) in October, November, or December, while the ninth was shot at Carmen Island on March 2.

This small, light-colored form of the Sparrow Hawk is of common occurrence in the Cape Region in autumn and winter, but it does not appear to breed there at all numerously, for Mr. Frazar met with it in summer only at San José del Rancho where he notes it as "very rare." It is believed to be confined to Lower California, but we have no definite knowledge as to just how far up the Peninsula its distribution extends. Mr. Bryant reports that he met with *Falco sparverius* "on Santa Margarita Island, Magdalena Island, Guadalupe Island, and several places" in Lower California; he also states that Mr. Anthony found it "common in summer along the base of San Pedro Martir, ranging in May to 9,000 feet altitude, and only seen on the coast during winter." These records relate of course either to *peninsularis* or *deserticolus* — or both — but at the time they were published neither of the forms just mentioned had been described.

Polyborus cheriway (JACQ.).

AUDUBON'S CARACARA.

Polyborus cheriway BELDING, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region), 547 (San José). BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 282 (Cape Region, Cape St. Lucas). BENDIRE, Life Hist. N. Amer. Birds, pt. I. 1892, 318 (descr. egg from Cape St. Lucas).

The Caracara is a resident species and is generally distributed and abundant, especially in the low country bordering the Gulf. Mr. Frazar notes it as paired and apparently breeding in January at La Paz, but he saw no nests until July 26, when one containing two chicks only a few hours old was found at San José del Rancho. On November 4, at San José del Cabo, he saw two Caracaras swoop at a slightly wounded Coot (Fulica) which was fluttering over a mud flat. Alighting they pursued it on foot, but although they evidently tried their best to overtake and capture it, it finally got to the water, when they gave up the chase and, after watching it awhile, flew off.

Mr. Bryant says that this species is "not often seen north of latitude 26°," but "two were said to have hung around a beach camp at Santo Domingo, on San Sebastian Viscaino Bay, north of lat. 28°." This probably represents about the extreme northern limit of the Caracara's range on the Pacific coast. To the southward it is found as far as Darien.

Pandion haliaëtus carolinensis (Gmel.).

American Osprey.

Pandion haliaëtus carolinensis Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region), 547 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 283 (Cape Region). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 324 (measurements of egg from Cape St. Lucas, largest of 69 specimens, 68.5 by 49.5 mm.).

The Osprey is apparently resident and about equally numerous at all seasons, in the Cape Region. Mr. Frazar found a nest on Carmen Island, early in March, which contained a single freshly laid egg.

On Santa Margarita Island Mr. Bryant "counted a dozen nests, January 19, 1888, upon five of which were one or two birds," but the "nests upon which the birds were seen" on the date just mentioned "were without eggs on February 18," although two fresh eggs were taken on this island on January 25.

In the northern part of the Peninsula Mr. Anthony considers this species "abundant on all of the coast islands, and of less common occurrence along the coast" itself (Bryant).

The range of the Osprey on the Pacific coast extends from Panama to Alaska. It is known to breed as far south as the Tres Marias Islands.

Strix pratincola Bonap.

American Barn Owl.

Aluco flammeus americanus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (San José del Cabo; Caduana).

Strix pratincola Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 283 (San José del Cabo; Caduana).

According to Mr. Ridgway, the Barn Owl was found by Mr. Xantus at San José del Cabo in December and January, and at Caduana in November. Mr. Belding does not mention it in any of his lists, nor was it actually taken by Mr. Frazar, but the latter obtained a number of its wing and tail feathers on the Sierra de la Laguna. Mr. Bryant heard the bird at Magdalena and again near San Quintin, and Mr. Anthony reports it as "common in the northwestern part of the territory, up to an altitude of 3,500 feet, inhabiting old mines" (Bryant).

On the Pacific coast the Barn Owl ranges from California to southern Mexico. It is apparently locally resident wherever found.

Asio accipitrinus (Pall.).

Short-eared Owl.

Asio accipitrinus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Miraflores); Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 284 (Miraflores).

The only record of the occurrence of this species in the Cape Region seems to be that given by Mr. Ridgway of a specimen [1] taken by Xantus at Miraflores on November 25. In the upper portion of the Peninsula Mr. Anthony has found it "along the coast region, north of San Fernando, in winter, and has frequently flushed . . . scattered companies of six to ten, from the salt grass about the bays. He has not seen them above 800 feet elevation" (Bryant).

The Short-eared Owl, at one season or another, visits nearly every part of the American continent, for it is a great wanderer, and decidedly more given to extended migrations than is any other species of its tribe. It breeds abundantly in the fur countries and sparingly or locally in the United States, just how far to the southward is not definitely known.

Megascops xantusi, sp. nov.

Xantus's Screech Owl.

Scops asio, var. *maccalli* Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, III. 1874, 52, 53, part (descr. first full, but incomplete plumage from Cape St. Lucas; crit.).

Scops trichopsis? (not of Wagler) Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas).

(?) *Scops* —— Belding, *Ibid.*, VI. 1883, 349 (Victoria Mts.; Agua Caliente; Miraflores). Ridgway, *Ibid.* (crit.).

[1] Mr. Ridgway writes me that he cannot find this specimen, and that he does not "know what can have become of it."

Scops Ridgway, *Loc. cit.* (Cape St. Lucas; crit.).

Megascops asio trichopsis (not *Scops trichopsis* Wagler) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 284 (Cape Region; ? Victoria Mts., etc.).

Specific Characters: — Most nearly like *M. vinaceus* Brewster,[1] but smaller, the general coloring paler and less reddish, the crown and outer surfaces of the wings lighter, the primaries with broad, well-defined light bars on *both* webs, the abdomen and flanks decidedly whiter, the under tail coverts nearly pure white and practically without mesial streaks, the feathering of the legs shorter and sparser.

♂ ad. (No. 47,301, collection of William Brewster, Santa Anita, Lower California, June 3, 1896; Loye Miller).[2] Upper parts drab, tinged with pinkish rusty on the back, inclining to ashy on the pileum and outer surfaces of the wings, to ashy white on the lores and sides of the crown, all the feathers except the primaries faintly vermiculated with reddish brown, those of the forehead, "ear tufts," back, rump, scapulars, and wing coverts with narrow shaft streaks of clove brown; primaries, secondaries, and tail-feathers barred with wood-brown, the bars on the tail narrow and distinct, excepting near the tips of the feathers, where they are broken and confused, those of the wings broad and distinct on both webs of all the primaries, but only faintly defined on the inner secondaries; outer scapulars, greater wing coverts, and outer primaries, with their exposed outer edges, hoary white; cheeks, throat, and breast pale ashy with the faintest possible suffusion of pinkish or rusty; abdomen, flanks, and crissum soiled white or ashy white; most of the feathers of the under parts with exceedingly fine, wavy, transverse lines of reddish brown, those of the throat, breast, and sides (but not of the under tail coverts nor of the center of the abdomen) with narrow, sharply-defined, mesial streaks of dark clove brown; tibiae tinged with fulvous and barred with reddish brown; under wing coverts pale fulvous heavily marked with dark brown; tarsi rusty white with a few reddish brown spots; toes naked nearly to their bases. Wing, 5.35; tail, 2.72; tarsus, 1.32; middle toe, .65; bill, length from nostril, .32; depth at nostril, .40; longest feathers of "ear tufts," .90.

Two young birds (No. 16,932 ♂ and No. 16,933 ♀, U. S. National Museum Collection, Cape St. Lucas; J. Xantus), fully grown but still in juvenal plumage, differ from the adult specimen just described in being much darker, browner, and more uniformly colored, in lacking all trace of mesial or shaft streaks on the feathers of the body, and in having the broad, light bars on the wing quills more rusty and nearly as pronounced and well defined on both webs of all the secondaries as on those of the primaries. The upper parts are faded reddish brown (not far from russet) with obscure, transverse lines of whitish on the pileum, back, and wing coverts; the cheeks, throat, and under parts generally are everywhere crossed by bands of reddish brown, which are much narrower than the brownish-white interspaces; the feathering of the legs is even scantier than in the mature bird.

On comparing both old and young with specimens in corresponding plumages of *bendirei*, *trichopsis*, and *cineraceus*, the only representatives of the *M. asio*

[1] Type locality: Durasno, Chihuahua, Mexico; see Auk, V. 1888, 88.

[2] This specimen was purchased from Mr. C. K. Worthen.

group known to occur along the southwestern border of the United States, I have become convinced that the Lower California bird is not likely to have been derived from any of these races. It is, indeed, so very unlike all of them and so similar in general appearance to the Mexican form *vinaceus* that I regard it as most nearly related to, and probably a direct offshoot from, the latter. The two birds, *xantusi* and *vinaceus*, with still another Mexican form, *M. cooperi*, appear to constitute what may be termed a subsection of the *M. asio* group, for although differing from one another in size they have the same general pattern of color and marking. This pattern is, in certain respects, unlike that common to the various races of *M. asio*, the principal differences consisting in the exceedingly fine vermiculation and more or less pronounced pinkish tone of the plumage of all three of the Mexican birds just mentioned. I will further remark in this connection that the form *trichopsis* seems to me to be perfectly distinct, specifically, from *M. asio*. Indeed, I do not see how it can be otherwise regarded, for it differs very strikingly from *cineraceus*, the only other representative of *asio* found in southern Arizona, where, moreover, both *trichopsis* and *cineraceus* appear to breed together, or at least in close proximity.

The sum as well as character of the differences which distinguish *M. xantusi* from the other members of the genus Megascops would not, in my estimation, warrant its recognition as a full species were it not for the obvious and practically complete isolation of its habitat from the regions inhabited by all the others, and especially from the habitat of its nearest ally, *M. vinaceus*. Were it at all closely related to the California form, *bendirei*, we might safely assume that it is likely to meet and intergrade with the latter in the central or northern parts of the Peninsula, but the two are so very unlike that the possibility of such intergradation is not worth considering.

Very little can be said at present regarding the distribution, and practically nothing concerning the habits, of this pretty little Screech Owl which I have named for the ornithologist by whom the first and hitherto only known specimens were obtained. Mr. Frazar did not meet with it, but it was, no doubt, the bird whose "tremulous notes" were heard at night by Mr. Belding at several of his camps in the Victoria Mountains as well as at Agua Caliente and Miraflores, and it may also have been the species with which Mr. Bryant had a similarly unsatisfactory experience "at the dry camp, Cardon Grande, and at El Rancho Viejo." According to the observer last named, "Mr. Anthony has seen a screech owl on several occasions between Valladares and the coast," but the bird of this region is most likely to be *M. a. bendirei*, which probably ranges southward into the northern portions of Lower California.

Bubo virginianus elachistus, subsp. nov.[1]

DWARF HORNED OWL.

Bubo virginianus (not *Strix virginiana* GMELIN) BAIRD, Cat. N. Amer. Birds, 1859, no. 48, part; Proc. Acad. Nat. Sci. Phila., 1859, 301, 302 (Cape St. Lucas). SHARPE, Cat. Birds Brit. Mus., II. 1875, 19–23, part.

[*Bubo virginianus*] var. *arcticus* COUES, Key N. Amer. Birds, 1872, 202, part.

Bubo virginianus, var. *arcticus* COUES, Check List, 1873, 63, no. 317 a, part. BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, III. 1874, 64, part (Lower California).

Bubo virginianus subarcticus (not *Bubo subarcticus* HOY) RIDGWAY, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 36, no. 405 a, part; Proc. U. S. Nat. Mus., VI. 1883, 349 (crit.; Victoria Mts.). BELDING, *Ibid.*, V. 1883, 543 Cape Region); VI. 1883, 349 (Victoria Mts.). BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 284 (Cape Region; Victoria Mts.).

Bubo virginianus arcticus COUES, Check List, 2d ed., 1882, 80, no. 463, part.

B.[ubo] virginianus subarcticus RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 263, part.

Subspecific Characters: — Similar to *Bubo virginianus saturatus*, but very much smaller.

Measurements: —

			Wing	Tarsus	Length of bill from nostril
Male	*Type*, No. 17,866	Sierra de la Laguna, May 31, 1887, M. Abbott Frazar	12.96	2.45	.85
Male	No. 17,865	San José del Rancho, July 20, 1887, M. Abbott Frazar	13.20	2.50	.85
Male	No. 47,302	Santa Anita, July 17, 1896, Loye Miller	12.52	2.28	.80
		Average	12.89+	2.41	.83+
Female	No. 17,867	Sierra de la Laguna, April 29, 1877, M. Abbott Frazar	13.42	2.35	.89

This dwarf form of *B. virginianus*, the smallest, if I am not mistaken, which is at present known, at least from any part of North America, is represented in my collection by four adult birds, three of which are colored and marked nearly like average specimens of *saturatus*. The fourth appears much paler, but it is in excessively worn condition, and a number of new feathers sprouting among and

[1] In April of the present year I showed my Horned Owls from the Cape Region to Mr. Oberholser. He told me that he had decided to describe the form which they represent, but finding that I had already done this in manuscript and that my paper was likely to appear before his, he was kind enough to suggest that I use the above name, which he had selected and which is derived from the Greek ἐλάχιστος = least.

beneath the old and faded ones indicate that the fresh plumage, when completed, would have been as dark as that of the other three skins. There is a specimen in the National Museum, however, obtained by Mr. Xantus in the Cape Region, which, although apparently neither worn nor faded, is nearly as light-colored as average examples of *B. v. pallescens*. Mr. Oberholser, who is at present engaged in a critical study of the entire *B. virginianus* group, tells me that he has noted similar color variations in most of the forms which he has examined, and that he regards them as representing different and probably permanent color phases comparable to, although less conspicuous than, those which are found in so many of the members of the genus Megascops.

Mr. Frazar found this Owl nearly everywhere from the coast to the tops of the highest mountains, but not commonly except on the Sierra de la Laguna, where as many as three or four were often heard hooting at once. Mr. Belding had a similar experience, rarely meeting the bird in the low country, whereas it was "frequently heard and occasionally seen" at the higher elevations. Its preference for the mountains is doubtless due to the fact that they afford the only extensive forests of large trees which exist in this region, for *Bubo virginianus* is comparatively indifferent to considerations of mean temperature and equally at home in subtropical, temperate, or subarctic climates. This, however, can be said only of the *species*, as the adaptation of the individual to extremes — whether of heat or cold, moisture or dryness — must be usually very gradual, for in most cases it has been accompanied by modifications of color or physique sufficiently pronounced to distinguish birds which have become established in one region from those of another where the climatic conditions are widely different. The Horned Owls which inhabit the southern extremity of Lower California afford a good illustration of this fact, for, as has been already pointed out, they differ considerably from all the forms which occur in other parts of North America. I have seen no specimens from anywhere on the Peninsula north of La Paz, and hence have no means of judging just how far northward the present subspecies extends, but Mr. Bryant states that "on the peninsula opposite Magdalena Island, I found in a giant cactus a bulky nest of sticks upon which could be seen two young" Horned Owls, and "at Comondu an owl of this genus was several times seen at the opening of a small cave high up in the cliff," while at Ubi one was heard hooting on the night of May 9, 1889, and at Calmalli a feather was picked up in the trail. Mr. Anthony also met with Horned Owls "among the pines on San Pedro Martir at 2,500 to 10,000 feet elevation" (Bryant).

Speotyto cunicularia hypogaea (Bonap.).

Burrowing Owl.

Speotyto cunicularia hypogaea Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 285 (Cape Region).

Mr. Belding and Mr. Frazar agree in considering the Burrowing Owl a rare bird in the Cape Region, where it is apparently confined to the low country near the coast. Mr. Frazar met with it on only two occasions; at La Paz, on April 4, when one which had been accidentally drowned in a water tank was brought to him by a boy, and at San José del Cabo, on October 26, when another was seen "in thick brush." The bird seems to be but little more numerously represented in the central and northern portions of the Peninsula, for Mr. Bryant mentions only one "seen by me on Cerros Island in January, 1885;" a female shot on March 1, 1889, on Santa Margarita Island; one or two observed by Mr. Brandegee on Magdalena Island; and a few found by Mr. Anthony at San Quintin. The latter observer has also recorded the occurrence of "a few in the more open valleys between the mines and the coast" at San Fernando,[1] as well as of others "seen in several of the valleys between Tia Juana and San Telmo."[2]

The range of the Burrowing Owl in western America extends from British Columbia to Mexico, and the bird is believed to breed wherever found.

Glaucidium hoskinsii (Brewst.).

Hoskins's Pygmy Owl.

Glaucidium gnoma Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 37, no. 409, part. Coues, Check List, 2d ed., 1882, 83, no. 484, part. A. O. U., Check List, 1886, 204, 205, no. 379, part.

[*Glaucidium*] *passerinum*, var. *californicum* Coues, Key N. Amer. Birds, 1872, 206, part.

Glaucidium passerinum, var. *californicum* Coues, Check List, 1873, 67, no. 329, part.

Glaucidium gnoma hoskinsii Brewster, Auk, V. 1888, 136 (orig. descr.; type from Sierra de la Laguna). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892, 408, 409 (Sierra de la Laguna; breeding habits and eggs unknown).

Glaucidium hoskinsii Brewster MS., A. O. U. Comm., Suppl. to Check List, 1889, 9; Check List, abridged ed., 1889, and 2d ed., 1895, no. 379.1. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 285 (Sierra de la Laguna; Comondu). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 593, 594 (descr.; mts. S. Lower Calif.).

G.[*laucidium*] *gnoma* Coues, Key N. Amer. Birds, 4th ed., 1894, 514, part.

Glaucidium hoskinsi Allen, Auk, X. 1893, 142 (tropical type). Coues, Key N. Amer. Birds, 4th ed., 1894. 904 (descr.; Lower Calif.).

[*Glaucidium*] *hoskinsi* Sharpe, Hand-list, I. 1899, 298.

This little Owl was discovered by Mr. Frazar on the Sierra de la Laguna, where it frequents the largest pines and oaks on the top and sides of the mountain. It appears to be rather common, for several were heard calling almost every night in May and early June. "Their notes resemble the syllables *cow*, *cow*, *cow*, repeated a number of times." Only three specimens were

[1] Auk, XII. 1895, 138.

[2] Zoe, IV. 1893, 235.

secured. Of these one was followed after dark and shot while in the act of calling; another was started from some thick brush in the daytime; and the third, also shot by daylight, was sitting in a tree surrounded by a noisy and excited mob of little birds, chiefly Baird's Juncos. During Mr. Frazar's autumn visit to the Sierra only one of these Owls was heard, on the night of November 30. Probably they do not call freely at this season.

Hoskins's Owl is apparently not confined to the Cape Region, for Mr. Bryant reports that he "shot a male at Comondu, March 22, 1889."

Micropallas whitneyi (Cooper).

Elf Owl.

Micrathene whitneyi Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (Miraflores); VI 1883, 349 (Victoria Mts.)

Micropallas whitneyi Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 285 (Victoria Mts.; Miraflores). Bendire, Life Hist. N. Amer. Birds, pt. I. 1892 411 (Miraflores).

Two specimens of this Owl, collected by Mr. Belding, have been sent me for examination by Mr. Ridgway. They are labeled respectively: 87,605 "Nat. Mus., Miraflores, Lower Cal., May 5, 1882, ♀, L. Belding," and 87,263 "Nat. Mus., Miraflores Village, May 8, 1882, L. Belding coll., ♂ I believe — not certain." Both are considerably deeper colored, especially above, than any of my Arizona examples, the former having the upper parts decided ashy brown instead of faded grayish brown, as in the latter. No. 87,605 lacks nearly all trace of the usual abundant and conspicuous rusty markings on the face and under parts, while the rusty spots on the crown, back, and wings are comparatively few and faint. No. 87,263 has the rusty of normal extent, but of a somewhat richer tint than usual. Neither specimen shows any apparent approach to the deep rusty colored and evidently quite distinct *M. graysoni* of Socorro Island.

Mr. Belding asserts that he found the Elf Owl "common, if not abundant" at Miraflores in 1882, and that he also met with it in "the mountains" in 1883, but it "appeared to be less common here than in the cactus regions" at lower levels. Mr. Bryant supplements this by stating that Mr. Belding collected four examples at Miraflores in April, 1882, but did not succeed in obtaining any in the mountains. This is of some importance, in view of the fact that Mr. Frazar failed not only to obtain specimens, but even to see or hear the bird, although during the nine months which he spent in Lower California, he went over most of the ground covered by Mr. Belding. He made no collections at Miraflores, however.

The Elf Owl has not been found as yet in the central or northern portions of the Peninsula, but it occurs in southern California and Arizona as well as in northwestern Mexico.

Crotophaga sulcirostris Swains.

Groove-billed Ani.

Crotophaga sulcirostris Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo; breeding; descr. nest). Bryant, Proc. Calif. Acad Sci., 2d ser., II. 1889, 285 (San José del Cabo); Zoe, II. 1891, 191, 192 (San José del Cabo). Bendire, Life Hist. N. Amer Birds, pt. II. 1895, 13, pl. 1, fig. 7 (descr. egg from near San José del Cabo, "an unscratched specimen").

Mr. Frazar met with the Groove-billed Ani only at San José del Cabo, where a flock of about thirty frequented some thick brush about pools of water near the mouth of the river. On August 28 a nest, empty, but apparently just finished, was found, and a perfect egg was taken from a female bird shot near at hand, and probably the owner of this nest. On September 3 another nest, containing three fresh eggs, was taken. These dates indicate either a very extended breeding season or great irregularity of breeding in different years, for at the same place in 1882 Mr. Belding found a nest which contained eight eggs on April 29. The latter observer also met with Groove-billed Anis "among tules at Santiago and at San Pedro on the western coast near Todos Santos," according to Mr. Bryant.

The nest found by Mr. Belding "was fastened to upright reeds, and was composed of coarse weed stalks and mesquit twigs, lined with green leaves." That taken by Mr. Frazar was in a willow about twenty feet above the ground. It is a flat, loose, but withal rather neat structure, formed outwardly of dead twigs and very substantially lined with cottonwood and willow leaves, which look as if they must have been dry when gathered. Mr. Frazar is very sure that such was the case, although he has no distinct recollection of their condition at the time the nest was found. This nest measures about six inches across the top, and the cavity is nearly an inch in depth. The eggs measure respectively: 1.22 × .95, 1.24 × .98 and 1.25 × .97. They are verditer blue, but this color becomes visible only on scraping off the whitish, calcareous substance with which their shells are uniformly and rather thickly covered. One side of each egg is stained with light reddish brown, evidently from contact with something in the nest. The egg already referred to as taken from the oviduct of a bird shot on August 23 is without any trace of this stain, but it has a calcareous coating like the others. It measures 1.25 × .98.

The Groove-billed Ani also inhabits the valley of the Lower Rio Grande in Texas as well as Mexico, Central America and northern South America. As it is not known to occur in central or northern Lower California, it seems probable that the colonies which have become established in the Cape Region were originated by birds which came from western Mexico.

Geococcyx californianus (Less.).

ROAD-RUNNER.

Saurothera californiana BOTTA, Nouv. Ann. Mus., IV. 1835, 123, pl. 9 (Cape St. Lucas).

Geococcyx californianus BAIRD, Proc. Acad. Nat. Sci. Phila., 1859, 301, 303 (Cape St. Lucas). BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, II. 1874, 473 (Xantus's specimens from Cape St. Lucas "smaller than those of Upper California"). BELDING, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region). BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 285 (Cape Region).

Road-runner BRYANT, Zoe, II. 1891, 192 (San José del Cabo).

Mr. Belding and Mr. Frazar are somewhat at odds in their views regarding this species, the former noting it as "common" without qualification as to certain localities, the latter as "a rare bird everywhere excepting at San José del Cabo, where it was fairly common, but confined almost exclusively to the gardens and green thickets along the river."

P. E. Botta stated as early as 1835 that the range of the Road-runner extends from Cape St. Lucas to San Francisco. Mr. Bryant, however, reports seeing "but one individual while crossing the peninsula from the Ocean to the Gulf in the latitude of Comondu" despite "the abundance of lizards and other suitable food," and adds that "they were rarely seen along the route from Comondu to San Quintin," although a little further northward "Mr. Anthony has found them from the coast to well into the pines on San Pedro Martir at an altitude of 7,000 feet" (Bryant), and "quite common about the mines, and much more so near the water holes near the mission" at San Fernando.[1]

The Road-runner occurs from California to Mexico, and is strictly resident wherever found.

Coccyzus americanus occidentalis RIDGW.

CALIFORNIA CUCKOO.

This Cuckoo, which is now reported from the Cape Region for the first time, was found by Mr. Frazar only at San José del Rancho, where it "first appeared on July 5, and soon became rather common, but did not begin nesting until the latter part of the month.' It probably occurs on the Sierra de la Laguna, also, for the people living there described it to Mr. Frazar, asserting that "it comes only in the time of the waters," *i. e.*, the rainy season, which begins in July. This was confirmed by a man at San José del Rancho, who spends much time on the Sierra hunting deer, and who, seeing a Cuckoo in Mr. Frazar's possession, remarked that he had often met with the bird on

[1] Anthony, Auk, XII. 1895, 138.

the mountain in midsummer. The lateness of its arrival in this region is remarkable, in view of the fact that its reaches California in May or early June.

Mr. Bryant reports that a Cuckoo which was probably *occidentalis* has been seen in August by Mr. Anthony at Ensenada, near the northern boundary of Lower California.

The California Cuckoo is found from Oregon to Costa Rica, on or near the Pacific coast, and, everywhere north of Mexico, at least, is migratory, going further south to pass the winter.

Ceryle alcyon (Linn.).

Belted Kingfisher.

Ceryle alcyon Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser, II. 1889, 286 (Cape Region).

Belted Kingfishers from Lower California, as well as those from the western United States generally, average larger than eastern birds. They also have stouter bills. As these differences are neither constant nor accompanied by any obvious geographical modifications of color or markings, it seems to me quite enough merely to mention them in passing.

Mr. Frazar found the Kingfisher rare at La Paz, but rather common about San José del Cabo. Mr. Belding gives it as common, but mentions no special localities. It apparently occurs only in autumn, winter and early spring. At these seasons it has been seen at various localities in the upper part of the Peninsula by Mr. Bryant and Mr. Anthony.

The Belted Kingfisher ranges from Alaska to Panama, but is not known to breed south of the southern boundary of the United States. Throughout California and northward to British Columbia it is found during both summer and winter, wherever there are clear streams that contain an abundance of fish.

Dryobates lucasanus (Xantus).

St. Lucas Woodpecker.

Picus lucasanus Xantus, Proc. Acad. Nat. Sci. Phila., 1859, 298 (orig. descr.; type from Cape St. Lucas). Baird, *Ibid.*, 301 (Cape St. Lucas), 302 (crit.; Cape St. Lucas). Cassin, *Ibid.*, 1863, 195, 196 (descr.; Lower Calif.). Malherbe, Mon. Picidae, I. 1861, 166 (descr.; Cape St. Lucas). Sclater, Cat. Amer. Birds, 1862, 333 (Cape St. Lucas). Gray, List Birds Brit. Mus. 1868, 50 (Lower Calif.). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, introd. (figures head and leg; probably equals *Picus scalaris*). Coues, Key N. Amer. Birds, 1872, 193 (crit.; Cape St. Lucas).

D.[*ictyopipo*] *lucasana* Cab. & Heine, Mus. Hein., pt. IV. sect. 2, 1863, 75, 76 (descr.; Cape St. Lucas).

[*Picus*] *lucasanus* GRAY, Hand-list, II. 1870, 186, no. 8,612.

Picus scalaris, var. *lucasanus* COOPER, Orn. Cal., 1870, 381, 382 (descr.; crit.; figures head and bill; Cape St. Lucas). COUES, Check List, 1873, 59, no. 297 b. BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, II. 1874, 519, 520 (descr.; crit.; Cape St. Lucas). JASPER, Birds N. Amer., 1878, 158, pl. 105, fig. 26 (Cape St. Lucas).

Picus scalaris lucasanus RIDGWAY, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 34, 65, 75, no. 363 a; Proc. U. S. Nat. Mus., VI. 1883, 158, footnote (crit.; S. Lower Calif.). COUES, Check List, 2d ed., 1882, 77, no. 436. BELDING, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region); VI. 1883, 345 (Cape Region), 349 (Victoria Mts).

P.[*icus*] *scalaris lucasanus* BELDING, *Loc. cit.*, 344 (Lower Calif.).

Dryobates scalaris lucasanus RIDGWAY, Proc. U. S. Nat. Mus., VIII. 1885, 355. A. O. U., Check List, 1886, 212, no. 396 a. BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 286 (Cape Region; Cape St. Lucas; Victoria Mts.; Santa Margarita Island, etc.). TOWNSEND, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas). ALLEN, Auk, X. 1893, 142 (tropical type). ANTHONY, Zoe, IV. 1893, 236 (San Pedro Martir); Auk, XII. 1895, 138 (San Fernando; San Telmo). BENDIRE, Life Hist. N. Amer. Birds, pt. II. 1895, 65 (Cape Region, etc.). MILLER, Auk, XI. 1894, 178 (San Diego co., Calif.).

Dendrocopus lucasanus HARGITT, Cat. Birds Brit. Mus., XVIII. 1890, 250 (descr.; La Paz; Cape St. Lucas; subsp. of *Dendrocopus scalaris*).

Dryobates [*scalaris lucasanus*] BRYANT, Zoe, II. 1891, 191 (San José del Cabo).

P.[*icus*] *s.* [*calaris*] *lucasanus* COUES, Key N. Amer. Birds, 4th ed., 1894, 482 (descr.; Cape St. Lucas).

D.[*ryobates*] *scalaris lucasanus* RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 285 (descr.; s. portion of Lower Calif.).

[*Picus scalaris*] var. *lucasana* DUBOIS, Synop. Avium, fasc. I. 1899, 71 (Basse-Californie).

[*Dendrocopus*] *lucasanus* SHARPE, Hand-list, II. 1900, 215.

All the characters which have been proposed for this Woodpecker are shown by the large series before me to be subject to much variation, but this, as in the case of *Melanerpes angustifrons*, is confined within limits which do not overlap, if, indeed, they quite reach those of the bird's nearest allies. The restriction of the black on the outer tail feathers is perhaps its best distinguishing feature, although this is not at all uniform, for many of my specimens have three complete dark bars crossing both webs of the outer tail feathers, while in one a fourth bar is only broken by a small space near the middle of the feather. The width of the dark bars on the back is also variable, although these bars are usually wider than in any of the allied forms. The feet average larger than those of *bairdi*, but they are by no means *always* larger. A difference which I do not find mentioned in descriptions, but which is shown by my series to be quite as constant as most of the characters that have been proposed, is that the white spots on the top of the head are much larger and more numerous than in *bairdi*, while the red is less vivid and more nearly restricted to the crown and occiput. In one specimen (No. 17,231, La Paz, March 26,

1887) this red is confined to the occiput and a narrow border on the side of the crown posterior to the eye, the remainder of the head above being plain black spotted with white.

Spring birds of both sexes are paler beneath than autumnal specimens, the latter having a decidedly browner cast. None of the females in my large series show any red on the head, but more than fifty per cent of them have the feathers of the forehead streaked with dull white. In one bird (No. 17,205, Santiago, Nov. 24, 1887) this white streaking extends over the entire crown, only the occiput being unmarked. Many specimens of both sexes have the white markings of the wings and tail tinged with brown, evidently a stain. In a few specimens this brownish is also conspicuous on the breast and throat.

Mr. Frazar considers this Woodpecker "rather common and generally distributed in the Cape Region, except on the mountains, where it was not met with." He found it most numerous about La Paz, but did not see it anywhere to the northward of that place during his trip along the Gulf coast. Mr. Belding includes it in his list of "Birds of the Mountains," but says that it was "rarely seen." On the Pacific coast of the Peninsula he traced it to a point thirty miles north of Todos Santos, which, however, by no means marks the limit of its distribution in this direction, for Mr. Bryant found it on Santa Margarita Island, and afterwards collected specimens as far north as latitude 28°. It has since been reported by Mr. Anthony[1] as "abundant about the cardoon and cirio trees" at San Fernando (lat. 29° 30′), where "young were seen in families of four or five" in June, and where the bird was "not uncommon along the coast and lower foothills as far as San Telmo at least, living in the thickets of pitahaya cactus (*Cereus gummosus*), and nesting in the dry flower stalks of the mescal agave which grows with the cactus. San Fernando and San Telmo skins are indistinguishable from those from Cape St. Lucas."

Although the St. Lucas Woodpecker is practically confined to the Peninsula it has been recorded from the northern part of San Diego county, California, by Mr. G. S. Miller, jr.[2]

Sphyrapicus varius nuchalis Baird.

Red-naped Sapsucker.

Sphyrapicus varius nuchalis Belding, Proc. U. S. Nat. Mus., VI. 1883, 349 (Laguna). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 286 (La Laguna).

A Red-naped Sapsucker "obtained at Laguna," on February 1, 1883, by Mr. Belding, is the only specimen known to have occurred in Lower California. The bird is probably of rare and irregular occurrence here (if, indeed, anything more than a mere waif) for its true home is the Rocky Mountain region and south into northern Mexico. A few specimens have been taken in southern

[1] Auk, XII. 1895, 138.

[2] Auk, XI. 1894, 178.

California, however, some of them among the foot hills not far from the coast. The form characteristic of California (*S. ruber*) is found in the northern part of Lower California.

Melanerpes angustifrons (Baird).

NARROW-FRONTED WOODPECKER.

Melanerpes formicivorus Cassin, Proc. Acad. Nat. Sci. Phila., 1863, 328 part (crit.; Lower Calif.).

Melanerpes formicivorus, var. *angustifrons* Baird, in Cooper, Orn. Cal., 1870, 405, 406 (orig. descr.; type from Cape St. Lucas; figures heads of male and female). Coues, Check List, 1873, 63, no. 310 a. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 573, pl. 53, figs. 3, 4 (descr.; crit.; Cape St. Lucas). Jasper, Birds N. Amer., 1878, 178, pl. 117, fig. 13 (Cape St. Lucas).

[*Melanerpes formicivorus*] var. *angustifrons* Coues, Key N. Amer. Birds, 1872, 197 (descr.; Cape St. Lucas). Dubois, Synop. Avium, fasc. I. 1899, 68 (Basse-Californie).

Melanerpes angustifrons Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, pl. 53, figs. 3, 4. Hargitt, Cat. Birds Brit. Mus., XVIII. 1890, 153, 154 (descr.; Sierra de la Laguna; Triunfo).

Melanerpes formicivorus angustifrons Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 35, 65, 75, no. 377 a; Proc. U. S. Nat. Mus., VI. 1883, 158, footnote (crit.; S. Lower Calif.). Coues, Check List, 2d ed., 1882, 79, no. 455. Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (Miraflores); VI. 1883, 349 (Victoria Mts.). A. O. U., Check List, 1886, 216, no. 407 a. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 287 (Miraflores; Victoria Mts.). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 117 (Cape Region; gives Wm. Brewster's description of eggs from Sierra de la Laguna).

M.[*elanerpes*] *f.*[*ormicivorus*] *angustifrons* Bryant, Zoe, II. 1891, 198 (Victoria Mts.). Coues, Key N. Amer. Birds, 4th ed., 1894, 490 (descr.; Lower Calif.)

M.[*elanerpes*] *formicivorus angustifrons* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 291 (descr.; s. portion of Lower Calif.).

[*Melanerpes*] *angustifrons* Sharpe, Hand-list, II. 1900, 209.

The characters originally given to this species, although in my opinion sufficiently pronounced and constant to separate it *specifically* from its nearest allies, are subject to considerable variation within certain limits. Thus both the white frontal band and the black band which, in the female, borders it posteriorly, vary greatly in width. The white in a few of my specimens extends back as far as the anterior corner of the eye and the black is nearly twice as wide (longitudinally) in some birds as in others, but the combined width of the white and black does not appear ever to exceed the width of the red patch on the crown and occiput, although in at least one of my examples it fully equals it. None of my birds have the forehead "gamboge," but it is tinged with citron yellow in many specimens; in the majority it is soiled white. In

one bird, a female, it is spotted with black. Another female has the black band on the crown plentifully sprinkled with red of the same tint as that of the occiput. The red of the occiput varies only slightly in shade with different birds. The amount of white streaking on the breast is also very uniform, although a single specimen (female, No. 17,332, Sierra de la Laguna, June 3, 1887), which, in other respects, is a typical *angustifrons*, has the black of the breast unstreaked over quite as broad a space as in average specimens of *bairdi*. About fifty per cent of my specimens of both sexes show more or less crimson red on the middle of the breast, this sometimes forming a rather large and distinct patch. A small number, perhaps five per cent, also of both sexes, have the plumage curiously variegated with light brown, varying from cinnamon to Vandyke brown. This is usually confined to the ends of the wing quills and tail feathers, but in a few specimens it extends over the whole dark portions of these feathers. One bird (female, No. 17,257, Triunfo, December 20, 1887), has not only much of the wings and tail, but also the wing coverts, shoulders, foreback and sides of the breast conspicuously washed with this light cinnamon brown. In another (male, No. 17,300, Sierra de la Laguna, June 3, 1887), the greater coverts of the left wing and some of the scapulars over the right wing are distinctly brown. I am quite at a loss to explain this peculiar coloring. It does not seem to result from a faded condition of the plumage, for some of the birds most affected are autumn specimens which had just moulted; nor can it be a stain, for many of the feathers are clear, light brown to their bases, showing no underlying tones of black, as would be the case had they been affected by any extraneous dye. Some of the feathers again have the centers glossy black bordered on all sides by brown. Occasional specimens of other Woodpeckers in my collection, notably *Dryobates arizonae* and *D. v. hyloscopus*, exhibit similar light brown markings.

This Woodpecker, which seems to be strictly confined to the Cape Region proper, is exceedingly abundant throughout the pine forests on the higher mountains south of La Paz and common at many places in the oaks at the bases of the mountains and among their foot-hills, ranging downward, according to Mr. Belding, to an elevation of about 700 feet. Mr. Frazar found it most numerous on the Sierra de la Laguna, during the last week of April and the first week of May. After that its numbers decreased perceptibly. It began breeding on this mountain the first week in June, but the breeding season was not at its height until the middle of that month.

Four fresh eggs, constituting a set, taken by Mr. Frazar on June 3, are white with a rather dull gloss — about as in average eggs of *Sphyrapicus varius*. They vary in shape from blunt ovate to broad elliptical oval and measure respectively: .95 × .75, .94 × .74, .89 × .77 and .89 × .76. This set is unaccompanied by any notes regarding the position or character of the nesting hole or of the behavior of the birds.

Only one specimen was seen at Triunfo during the last two weeks of June, but the bird was common and presumably breeding at Pierce's Ranch in July. At the latter place it fairly swarmed in December, the resident colony being

probably augmented by large numbers of winter visitors from La Laguna, where Mr. Frazar found only a few birds lingering in late November and early December. Along the road between San José del Cabo and Miraflores it was seen in considerable numbers on November 15, and three were observed in some evergreen oaks at Santiago on November 23.

This Woodpecker, like its near allies *M. formicivorus* and *M. f. bairdi*, has the habit of storing acorns in holes which it pecks for their reception in the trunks of trees. On the Sierra de la Laguna Mr. Frazar found "many dead pines literally stuffed full of acorns."

M. f. bairdi, the form found throughout California, passes the southern boundary of that State and ranges as far south on the Peninsula as San Pedro Martir, where it is not very numerously represented but "probably resident." [1]

Melanerpes uropygialis (Baird).

Gila Woodpecker.

Centurus uropygialis Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 302 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region); VI. 1883, 345 (Cape Region).

Melanerpes uropygialis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 287 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas; La Paz). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 127 (vicinity of Cape St. Lucas).

My numerous Lower California specimens of this Woodpecker do not appear to differ from those which I have received from Arizona and northern Mexico.

Individual variations: — Males. The red of the crown varies from deep crimson to orange chrome, but its distribution is very uniform. The width of the dark bars on the back, rump, wings, etc., is highly variable; all my specimens have the rump and upper tail coverts distinctly barred. The color of the head, neck, and under parts varies from hair brown to buffy drab, the yellow of the belly from pale maize yellow to deep cadmium orange. Usually the yellow forms a broad, conspicuous patch, but in a few specimens it is faint and restricted. Several of the spring specimens are more or less stained with umber brown on the wings, tail, and under parts.

Females. In respect to the yellow of the belly, the brown of the head and under parts, the width of the dark barring, and the staining of the wings, tail, and breast, the females vary much as do the males. Most of them have the forehead lighter than the rest of the head and in a few it is pure light buff. One bird has the auriculars, *on one side of the head only*, decidedly buffy in contrast with the color of the rest of the head. Two birds (No. 17,355, Santiago, November 25, and No. 11,404, Triunfo, December 12, 1887), both in full autumn plumage, show traces of red on the crown, one having a single crimson-tipped feather; the other, two feathers crimson nearly to their bases.

[1] Anthony, Zoe, IV. 1893, 236.

Seasonal variations: — Spring, autumn, and winter specimens are essentially similar to one another, but the birds taken in October and early November have the general coloring clearer, and that of the head and under parts a trifle ashier, than in those collected at other seasons.

In the Cape Region the Gila Woodpecker has apparently much the same distribution as *Dryobates lucasanus*. Neither Mr. Belding nor Mr. Frazar found it in the higher mountains, but both note its abundance throughout the low country, and Mr. Frazar obtained many specimens at Triunfo which is within the lower edge of the oak belt. Mr. Belding traced it to about thirty miles north of Todos Santos on the Pacific coast, but it extends still farther up the Peninsula, for Mr. Bryant "found a few on Santa Margarita Island, and met with them generally along the overland route" — just how far to the northward he neglects to state, however. Mr. Anthony says that "the range of this species along the Pacific slope [of the Peninsula] is exactly coëxtensive with that of *Cereus pringlei*, becoming common with that cactus a short distance below Rosario and seldom if ever being seen at any distance from the shelter of its mighty branches." [1]

The Gila Woodpecker is not, of course, confined to Lower California. Elsewhere it occurs more or less numerously in southeastern California, southern Arizona and western Mexico. It is apparently resident wherever found.

Colaptes chrysoides (Malh.).

Gilded Flicker.

Colaptes chrysoides Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 302, 303 (crit.; descr. male and female; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 583, 584, pl. 54, fig. 2 (descr.; crit.; breeding at Cape St. Lucas, May 19). Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (Cape Region); VI. 1883, 345 (Cape Region), 349 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 287 (Cape Region). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 139 (vicinity of Cape St. Lucas). Salvin and Godman, Biol. Centr.-Amer., Aves, II. 1895, 405 (breeding at Cape St. Lucas; descr. male from La Paz).

My Lower California specimens appear to be in every way identical with birds from Arizona and northern Sonora, Mexico. A pair from Alamos, southern Sonora, are much darker above, with the ashy of the throat and breast deeper and duller, and the under parts browner. If additional material from Mexico should show that these color peculiarities are constant they would be quite sufficient to warrant the separation of the birds which inhabit the region about Alamos.

Individual variations: — *Both sexes.* The rump and upper tail coverts are sometimes distinctly (but always finely) barred with black, sometimes immacu-

[1] Auk, XII. 1895, 138, 139.

late white; the under wing coverts, usually profusely mottled and barred with blackish, are sometimes nearly plain; while the outer webs of the outer pair of tail feathers, as a rule notched distinctly with yellow, are occasionally plain black. The black markings on the under parts vary considerably in number and size, some specimens being profusely and heavily, others sparsely and finely, spotted. The barring of the upper parts is similarly variable, a few birds having the dark bars nearly obsolete on the back, although they are usually broad and distinct. None of my specimens show any red on the occiput or tinge of reddish in the yellow of the wings and tail; nor have any of the males black mixed with the red of the moustache. The ends of the wings and tail, as well as most of the under parts, are sometimes stained with umber, as in several other species of Woodpeckers from this region.

Seasonal variations: — Specimens in fresh autumn plumage have the general coloring a trifle clearer than do spring birds. I am unable to detect any other differences which can be associated with season.

Mr. Belding and Mr. Frazar agree as to the rarity of the Gilded Flicker on the higher mountains, where only a few individuals were seen by the former, and but two (both females, taken on the Sierra de la Laguna, April 29) obtained by the latter. The bird's true home is evidently at the bases of the mountains, and among their foot-hills extending thence to the shores of the Pacific on the south and west, to those of the Gulf on the east. Throughout this region it is a common species, although not so numerously represented as *Melanerpes uropygialis*. On the arid plains near the coast it breeds in the stems of the giant cactus. Mr. Bryant found it "rare on Santa Margarita Island," but it was "generally encountered along the overland route." Mr. Anthony has said that its "northwestern range" on the Peninsula "is almost, if not quite, the same" as that of *M. uropygialis*,[1] but soon after making this statement he found that the birds which occur in northern Lower California differ from those of the Cape Region "in darker upper parts and slightly smaller size." He has accordingly proposed to recognize the former as representing a distinct subspecies under the name *Colaptes chrysoides brunnescens*.[2] This form is said to be confined to northern Lower California, while typical *chrysoides* occurs not only in the central and southern portions of the Peninsula, but in Arizona and northwestern Mexico, also.

Phalaenoptilus nuttallii nitidus Brewst.

Frosted Poor-will.

Phalaenoptilus nuttalli (not *Caprimulgus nuttallii* Audubon) Belding, Proc. U. S. Nat. Mus., VI. 1883, 349 (Victoria Mts.).

I have only a pair of these Poor-wills from the Cape Region, both taken on the Sierra de la Laguna, the male on June 2, the female on June 6. They

[1] Auk, XII. 1895, 139.

[2] Auk, *Loc. cit.*, 347.

agree in all essential respects with *P. n. nitidus*, although the coloring of their upper parts is a trifle darker, and the terminal white tail band a little wider, than in my types of that subspecies. The Lower California male has the abdomen and flanks wholly without trace of dark bars.

P. n. nitidus seems to be a perfectly good subspecies, although its distribution is somewhat irregular and difficult to understand. It has been found in Texas, Kansas, and portions of Arizona, and it probably occurs in northwestern Mexico, also, although the bird of the Sierra Madre region is true *nuttallii*.

Mr. Belding was doubtless right in suspecting that he heard the notes of a Phalaenoptilus in the mountains of the Cape Region, for Mr. Frazar found the Frosted Poor-will very common on the Sierra de la Laguna in May and June. It was also noted in July at both Pierce's Ranch and Triunfo, but not commonly at either place. A single bird, probably a migrant on its way south, was heard at San José del Cabo on the evening of September 2.

Mr. Frazar states that on the mountains these Poor-wills did not begin singing until about the middle of May. "Their note is a *pow-wè-hoo*, the first syllable given long, the accent on the second, and the last little more than a retraction of the breath. They were almost invariably in large oaks and very seldom on the ground. A female shot June 6 was undoubtedly mated and would have laid soon."

Mr. Bryant records [1] *P. n. californicus* from Tia Juana, San Pedro Martir, and Pozo Grande. At the latter place a male was taken on March 19, 1889. Poor-wills were also "heard every evening on the steep hillsides at Comondu, and at various other localities," but the specimen just mentioned seems to be the only one actually examined by Mr. Bryant.

Mr. Anthony asserts that of three Poor-wills which he obtained in the northern part of the Peninsula in 1894 "two are rather intermediate between *californicus* and *nitidus*, although one was collected as far north as Burro Cañon, north of Ensenada. The third, No. 5,266, collected at San Fernando May 4, if not true *nitidus*, is not far from that form." [2]

Chordeiles acutipennis texensis (Lawr.).

Texan Nighthawk.

Chordeiles texensis Baird, Proc. Acad. Nat. Sci. Phila, 1859, 301, 303 (Cape St. Lucas). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 288 (Cape Region).

Chordeiles acutipennis, var. *texensis* Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 407 (abundant at Cape St. Lucas; breeding at Cape St. Lucas in May).

Chordeiles acutipennis texensis Belding, Proc. U. S. Nat. Mus., V. 1883, 543 (La Paz; San José).

[1] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 287, 288.

[2] Auk, XII. 1895, 139.

Numerous examples of this species in my collection from Lower California, Arizona, and western Mexico, show no appreciable geographical variations in respect to either size or color, but they average a trifle smaller and, as a rule, are somewhat lighter colored than a number of Texas specimens in the collection of the late Mr. Sennett.

Mr. Frazar saw the first Texan Nighthawk at Triunfo on the evening of April 15. It was next met with on the Sierra de la Laguna, where one or two were observed the last week in May. At Triunfo the birds were abundant during the last three weeks of June, appearing regularly every evening near the ranch, and skimming back and forth close over a large wood pile, which evidently harbored insects on which they were feeding. After a succession of heavy showers which occurred at this place early in July they suddenly and wholly disappeared. At San José del Cabo a few were seen at intervals through the autumn up to November 11, and several were observed near Santiago on December 3. Mr. Belding found the species "abundant at San José after April 23," but he says that it was "rarely seen at La Paz." As the latter statement presumably refers to some date or dates between December 15, 1881, and March 21, 1882, it seems fair to assume that the December instance noted by Mr. Frazar was not exceptional, and that at least a few birds regularly winter in the Cape Region. Mr. Frazar obtained a set of two eggs, slightly incubated, at Pierce's Ranch, on July 20.

The Texan Nighthawk seems to be generally distributed throughout the central and northern portions of the Peninsula, although, judging by Mr. Bryant's experience, it is nowhere very common to the northward of La Paz. Its extralimital range includes the lower border of the United States from southern California to eastern Texas, southward to Central America.

Chaetura vauxii (Towns.).

Vaux's Swift.

At San José del Cabo on September 24, and again on November 2, Mr. Frazar saw "a small black Swift" which he thought belonged to this species, and which, indeed, could not well have been anything else. On each occasion only a single bird was observed, but the one seen in September was accompanied by a number of Barn and Eave Swallows. *Chaetura vauxii* was of course to be expected in this region, at least as a migrant, but it has not been reported up to this time, although it was observed by Mr. Belding in May, 1885, between San Rafael and San Pedro Martir, in the northern portion of the Peninsula (Bryant).

Vaux's Swift is found on the Pacific slope from British Columbia south into Mexico. It is not known to breed south of San Francisco.

Aëronautes melanoleucus (Baird).

White-throated Swift.

Cypselus saxatilis Belding, Proc. U. S. Nat. Mus., V. 1883, 547 (San José del Cabo; San José).

Micropus melanoleucus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 288 (San José del Cabo).

Two specimens, both males, taken on May 19 on the Sierra de la Laguna, are slightly smaller than the average of my Colorado examples, but are otherwise similar to the latter.

On the Sierra de la Laguna, during May and the first week in June, Mr. Frazar saw these Swifts almost daily, but never in very great numbers. They were usually observed flying along the sides of the mountain, and only once over its summit. The sexual organs of two males shot on May 19 were at the maximum stage of development, but Mr. Frazar obtained no other evidence that the species breeds in these mountains, nor did he find it elsewhere in Lower California. Mr. Belding, however, noted it at San José del Cabo on April 29, 1882.

The range of the White-throated Swift extends from California to Central America. It breeds at many places in the mountains of California as far south as San Bernardino.

Calypte costae (Bourc.).

Costa's Hummingbird.

Calypte costae Belding, Proc. U. S. Nat. Mus., V. 1883, 542 (Cape Region; San José; Cape St. Lucas; Miraflores), 547 (breeding at La Paz); VI. 1883, 348 (Victoria Mts.). Ridgway, *Ibid.*, V. 1883, 542 (descr. nests and eggs); Rep. U. S. Nat. Mus., 1889–1890, 1891, 337–339, pl. 39 (Cape district of Lower Calif.; figures female and nest from La Paz).

Trochilus costae Bryant, Zoe, II. 1891, 191 (San José del Cabo).

Lower California specimens do not appear to be in any way peculiar.

Individual variations: — Adult males. The amount of green on the back, sides, and abdomen is somewhat variable, and the length of the bill exceedingly so. Most of my specimens have the purplish of the forehead obscured by what appears to be a thin coating of pollen. In one taken at La Paz on February 24, 1887, the forehead and throat are covered with pin feathers.

Immature males. A male killed at La Paz on February 23, 1887, differs from the adult female only in having the plumage of the top and sides of the head browner and interspersed with a few (three or four) purple feathers. It is evidently a bird of the preceding year.

Adult females. In some specimens the throat is perfectly plain: in others tinged with rusty; in still others sprinkled with small purplish spots, while in one bird (No. 17,083, La Paz, February 24, 1887), there is a rather large central patch of dull but iridescent purple. None of my females show any purplish on the crown.

This Hummingbird occurs throughout Lower California. In the Cape Region it is a resident species of somewhat local and peculiar distribution during the breeding season, although at other times of the year it apparently wanders over considerable areas in search of food. Thus Mr. Frazar found it abundant near La Paz in February and March and among the Victoria Mountains (opposite Carmen Island) during the latter month, but he failed to detect even a single specimen on the Sierra de la Laguna in May or early June. Mr. Belding characterizes it as "abundant in winter" about La Paz, but "not common at San José, Cape Saint Lucas, or Miraflores in April and May." At San José del Rancho Mr. Frazar saw only one or two in early July, but soon after the middle of that month a succession of heavy showers caused the vegetation to spring suddenly into leaf, and Costa's Hummers appeared in large numbers, coming, Mr. Frazar thought, from the region to the northward. They were most abundant about July 25, after which their numbers declined steadily. None were seen either here or at Triunfo in December.

According to Mr. Belding, Costa's Hummingbird seldom ranges above 2,000 feet altitude, and "thrives in barren, waterless tracts." Mr. Anthony, however, found it nesting in May, 1893, among the pines on San Pedro Martir at an altitude of 7,500 feet.[1] In the more southern portions of Lower California it breeds in January, February, and March, the earliest date on record being January 17, 1881, when Mr. Bryant found a nest containing "large young," on Santa Margarita Island.[2]

The general range of Costa's Hummingbird includes southern California, Arizona and western Mexico.

It is possible that *Selasphorus alleni* sometimes visits the Cape Region, for Mr. Frazar obtained an adult female in the Victoria Mountains opposite Carmen Island, on March 11, 1887.

Basilinna xantusi (Lawr.).

Xantus's Hummingbird.

Amazilia xantusii Lawrence, Ann Lyc. Nat. Hist. N. Y., VII. 1860, 109, 110 (orig. descr. of female; type from Cape St. Lucas).

Heliopaedica castaneocauda Lawrence, *Loc. cit.*, 145 (orig. descr. of male; crit; Cape St. Lucas).

A.[mazilia] xantusi Sclater, Ibis, 1860, 309 (crit.; Cape St. Lucas).

[1] Zoe, IV. 1893, 237.

[2] Proc. Calif. Acad. Sci., 2d ser., II. 1889, 289.

Heliopaedica xantusi GOULD, Mon. Troch., II. 1861, pl. 65 (descr.); Intr. Troch., 1861, 61. ELLIOT, Illustr. New and Unfig. N. Amer. Birds, I. 1869, pl. 22. BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, II. 1874, 467, pl. 47, fig. 3 (descr. male and female; Cape St. Lucas). MULSANT and VERREAUX, Hist. Nat. Ois.-Mouches, II. 1876, 3 (descr.). JASPER, Birds N. Amer., 1878, 156, pl. 105, fig. 7 (Cape St. Lucas).

B.[*asilinna*] *xantusi* HEINE, Jour. Orn., 1863, 196 (crit.). COUES, Key N. Amer. Birds, 4th ed., 1894, 460, 461 (descr.; Cape St. Lucas.) RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 318 (descr.; s. portion of Lower Calif.).

[*Hylocharis*] *xantusi* MULSANT and VERREAUX, Class. Troch., 1866, 38 (characters of the genus). SHARPE, Hand-list, II. 1900, 110.

Hylocharis xantusii GRAY, Hand-list, I. 1869, 151, no. 1,950.

Heliopaedica xantusii COOPER, Orn. Cal., 1870, 365 (descr.; Cape St. Lucas). COUES, Check List, 1873, 55, no. 273.

[*Heliopaedica*] *xantusii* COUES, Key N. Amer. Birds, 1872, 184 (descr.; Cape St. Lucas).

Heliopaedica xanthusi MULSANT, Ann. Soc. Linn. Lyon, nouv. sér., XXII. 1876, 207 (Mexique). MULSANT and VERREAUX, Hist. Nat. Ois.-Mouches, IV. 1877, 186 (synonymy).

Coeligena xanthusi MULSANT and VERREAUX, *Loc. cit.*, I. 1877, 190–192, pl. — (descr.; near Cape St. Lucas).

Basilinna xanthusi ELLIOT, Class. and Syn. Trochilidae, 1879, 227 (descr.; Cape St. Lucas). EUDES-DESLONGCHAMPS, Ann. Mus. Hist. Nat. Caen, I. 1881, 479–481 (descr.). BOUCARD, The Humming Bird, IV. 1894, 178, 179 (descr.; Cape St. Lucas).

Basilinna xantusi RIDGWAY, Proc. U. S. Nat. Mus., III. 1880, 6, 319 (Cape St. Lucas); V. 1883, 542, 543 (descr. Belding's nests and eggs from San José, April 23, and arroyo, n. of Santiago Peak, May 9); VI. 1883, 158, footnote (crit.; S. Lower Calif.); Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 33, 65, 75, no. 347; Rep. U. S. Nat. Mus., 1889–1890, 1891, 369–371, pl. 44 (Cape district of Lower Calif.; descr. male, female, nest, and eggs; figures male and female from Pierce's Ranch, and nest from San José). COUES, Check List, 2d ed., 1882, 73, no. 407. BELDING, Proc. U. S. Nat. Mus., V. 1883, 542 (mountain cañons of Cape Region; Cacachiles Mt.; San José; descr. nest from San José, April 23); VI. 1883, 349 (Victoria Mts.). A. O. U., Check List, 1886, 227, no. 440. BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 289, 290 (Cape Region; Comondu, etc.); Zoe, II. 1891, 191 (San José del Cabo). SALVIN, Cat. Birds Brit. Mus., XVI. 1892, 255 (descr.; Agua Escondida; mountains s. of La Paz; Triunfo; San José del Cabo). ALLEN, Auk, X. 1893, 142 (tropical type). BENDIRE, Life Hist. N. Amer. Birds, pt. II. 1895, 226, 227 (Cacachiles Mts.; San José; near Santiago Peak, etc.; descr. Belding's nests and eggs).

Xantus's hummingbird BRYANT *Loc. cit.*, 198 (Victoria Mts.).

[*Basilinna*] *xanthusi* DUBOIS, Synop. Avium, fasc. II. 1900, 139 (Basse-Californie).

Seasonal variations: — *Males.* The series collected by Mr. Frazar includes specimens taken every month of the year excepting October and January. The summer and autumn birds are by far the brightest colored, having the green of the back quite pure; the black of the forehead, sides of head and chin,

deep velvety often glossed with violet or blue; the metallic green of the throat, clear and brilliant; the cinnamon rufous of the under parts, rich and pure. The spring birds (March, April, and May), are uniformly much duller and paler, the green of the back being much tinged with ashy or rusty, and the black of the head with brown, while the green of the throat is muddy in tone and but slightly iridescent. One bird (No. 17,031, Triunfo, April 11, 1887) has the black of the head confined to the auriculars, and the green of the throat to a few central spots, the rest of the under parts being dull cinnamon rufous, and the entire upper parts dull green with most of the feathers tipped with rusty cinnamon. This specimen is evidently immature and probably in juvenal plumage. The fact that it is the only male in the entire series which does not have the whole throat greenish and the forehead, cheeks, and lores black or dark brownish, would seem to indicate that young birds acquire the fully adult plumage with their first complete moult.

Baird, Brewer, and Ridgway describe and figure the male of this species as having "a distinct white stripe from bill, through and behind the eye." Coues says [1] that this stripe passes "through the eye." Elliot implies that it is situated as in *B. leucotis*, that is, "above and behind the eye." Ridgway states [2] that it is "behind eye." In all of the seventy males in my series it starts immediately above the middle of the eye, and curving down behind it extends straight backward along the side of the head for about half an inch, impinging closely on the eye both above and behind the upper eyelid.

Another discrepancy in the descriptions just referred to is in respect to the color of the bill. Baird, Brewer, and Ridgway say "whole upper mandible apparently dusky; base of lower, red;" Coues, "flesh-colored, black tipped;" Elliot, "red, tip black." In my dried specimens the basal half to three-fourths of the upper mandible and the basal three-fourths to seven-eighths of the lower mandible are flesh-colored, the remainder of both mandibles being dark brown.

Females. As with the males, the spring specimens are much paler and duller than the summer ones. Some of the latter have the top and sides of head, the upper tail coverts, and the middle pair of tail feathers strongly tinged with cinnamon. The superciliary stripe is often nearly pure white in early spring birds. Ridgway says [3] that the throat of the female is either "with or without green spots." In my series of forty-one females not one shows the slightest trace of green spotting on the throat.

This Hummingbird is peculiar to Lower California, but it is not strictly confined to the Cape Region, for Mr. Frazar found it common at a point about one hundred and fifty miles north of La Paz among the mountains opposite Carmen Island in latitude 26°, and Mr. Bryant has traced its extension still farther northward to about latitude 29°. It seems to be most abundant, however, in

[1] Key N. Amer. Birds, 4th ed., 1894, 460.
[2] Man. N. Amer. Birds, 1887, 318.
[3] *Loc. cit.*

the mountains south of La Paz, especially on the Sierra de la Laguna, where it ranges from the highest elevations down to the lower limits of the oaks among the foothills. It also occurs — at least sparingly and locally at certain seasons — in the low arid country near the coast, for Mr. Frazar took a male at La Paz on February 11, and saw upward of a dozen at San José del Cabo in September. At the latter place, Mr. Belding found it "common in orchards" about the last of April, 1882. Among the mountains it shows a marked preference for cañons, especially such as have pools or small streams of water. Mr. Belding says that "in winter" it is "found only in mountain cañons," but Mr. Frazar's experience was exactly the reverse of this, for during his winter visit to the Sierra de la Laguna (November 27–December 2), the "whole top of the cold, sleety mountain was alive with Xantus's Hummers, which seemed to be attracted there by an abundant shrub covered with *dry* yellow blossoms, whereas in May and June they were confined quite closely to the cañons." The truth of the matter probably is that their movements, like those of most other members of this family, are dependent largely on the presence or absence, at any given locality or season, of the flowers on which they feed.

A nest found at San José del Rancho, on July 28, was placed at the extremity of a slender, drooping oak twig, about eight feet above the ground. One side is built against and around the main stem (here only .12 inches in diameter), and the bottom rests securely on a terminal fork, from the ends of which hang a number of dry, bleached oak leaves, apparently of the previous year's growth. The chief, if not only, material composing the walls of this nest consists of small, woolly leaves of a pale sage-green color, intermixed with reddish-brown, catkin-shaped objects, which appear to be made up of numerous minute seed vessels attached in double, triple, or quadruple rows or clusters to stems an inch or more in length. The entire outer surface of the nest is wrapped with a net-work of spider-web silk so fine as to be well-nigh invisible but sufficiently strong and tautly drawn to give the walls a firm, smooth outline. The interior is not lined save at the bottom, which is furnished with a soft bed of whitish down, evidently that of some bird. This nest measures externally 1.60 inches in diameter by 1.65 in depth; internally, .73 inches in diameter by .50 in depth.

Tyrannus vociferans Swains.

Cassin's Kingbird.

Tyrannus vociferans Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region); VI. 1883, 348 (Laguna). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 290 (Cape Region).

Mr. Frazar found Cassin's Kingbirds abundant at La Paz in February, and early March, when they seemed to be passing northward. They were numerous again, on the return migration, during the last week of August and first ten days of September, at San Jose del Cabo, but rare in December (18–25) at

San José del Rancho, where a few seen in July were apparently breeding, although no nests were discovered. None were met with by Mr. Frazar on the mountains, but in 1883 the species was seen "around the meadow at Laguna" by Mr. Belding.

According to Mr. Bryant *T. vociferans* is not at all common in the central and northern portions of the Peninsula. Mr. Anthony, who "found it nesting in live oaks and cottonwoods up to about 4,000 feet altitude, . . . thinks he has seen none after the middle of November" (Bryant), but in California the species is said to be resident as far north as Los Angeles county. It migrates as far south, however, as Guatemala. The closely allied *T. verticalis* has been recorded from the northern part of Lower California.

Myiarchus cinerascens pertinax (Baird).

Lower California Flycatcher.

Myiarchus mexicanus (not *Tyrannula mexicana* Kaup) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 303 (crit.; Cape St. Lucas). Cooper, Orn. Cal., 1870, 316, 317, part (crit.; Cape St. Lucas).

M.[yiarchus] pertinax Baird, *Loc. cit.*, 303 (Cape St. Lucas; provis. name for bird of Lower Calif.). Coues, Key N. Amer. Birds, 1872, 171 (crit.; Cape St. Lucas).

[*Pyrocephalus*] *mexicanus* Gray, Hand-list, I. 1869, 362, no. 5,519, part.

Myiarchus mexicanus, var. *pertinax* Cooper, *Loc. cit.*, 317 (crit.; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 337, 339 (crit.; Cape St. Lucas).

[*Myiarchus*] *cinerascens* Coues, Key N. Amer. Birds, 1872, 171, part (crit.; Cape St. Lucas). Dubois, Synop. Avium, fasc. IV. 1900, 250, part (Mexique). Sharpe, Hand-list, III. 1901, 144, part.

Myiarchus cinerascens (not *Tyrannula cinerascens* Lawrence) Coues, Proc. Acad. Nat. Sci. Phila., 1872, 69, 70, part (crit.; Cape St. Lucas); Check List, 1873, 51, no. 248, part. Coues and Streets, Bull. U. S. Nat. Mus., no. 7, 1877, 12 (Pichilinque Bay; Cape St. Lucas). Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 31, no. 313, part. Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region). A. O. U., Check List, 1886, 232, no. 454, part. Sclater, Cat. Birds Brit. Mus., XIV. 1888, 248, 249, part (La Paz; Cape St. Lucas). Salvin and Godman, Biol. Centr.-Amer., Aves, II. 1889, 91, part (synonymy). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 290, part at least (Lower Calif.).

Myiarchus crinitus, var. *cinerascens* Baird, Brewer, and Ridgway, *Loc. cit.*, 337, part (Cape St. Lucas).

Myiarchus cinerescens (err. typ.) Coues, Check List, 2d ed., 1882, 69, no. 375, part.

M.[yiarchus] cinerescens (err. typ.) Coues, Key N. Amer. Birds, 4th ed., 1894, 436, part (crit.; Cape St. Lucas).

M.[yiarchus] cinerascens Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 333, part.

My specimens from the Cape Region differ rather constantly from those from western Mexico and the United States in having longer as well as usually stouter bills. They are also almost invariably grayer above, especially on the crown and nape, and less yellowish on the abdomen, crissum, under tail coverts, and flanks. The grayish on the nape is often so pronounced as to form an obscure but noticeable band or collar. In autumnal plumage the abdomen, flanks, crissum, and under tail coverts are primrose yellow, the back faintly tinged with olive, the light edging of the secondaries and wing coverts slightly olivaceous; otherwise this plumage does not differ materially from that of spring.

The peculiarities above mentioned seem to me sufficiently pronounced to entitle this bird to subspecific separation from *cinerascens*. Baird as long ago as 1859 remarked the "rather stouter bill" which, he adds, "appears to be a constant character, and may one day cause its [the Lower California bird's] separation as a species. (*M. pertinax*, Baird)." Hence the form is already supplied with a name under which I have ventured to reinstate it here.

This Flycatcher is resident in the Cape Region from La Paz southward, but Mr. Frazar saw only a very few at San José del Cabo, and none on the Sierra de la Laguna. Its favorite haunts are arid, cactus-grown plains in the low country near the coast, but it also frequents thickets, where they are to be found.

Just how far to the northward on the Peninsula *pertinax* ranges before merging into or giving place to true *cinerascens* I am unable to state. Mr. Bryant, who does not discriminate between the two forms, says that the Ash-throated Flycatcher is "one of the most generally distributed species found in Lower California."

Sayornis saya (Bonap.).

Say's Phoebe.

Sayornis sayi Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region).
Sayornis saya Bryant, Proc. Calif. Sci., 2d ser., II. 1889, 290 (Cape Region).

Say's Phoebe occurs in the Cape Region only during winter, and even then it is apparently rare. Mr. Frazar took but three specimens, all at La Paz, in February. The species breeds in the northern portion of the Peninsula, for Mr. Anthony found some nests "in old mines and tunnels at Valladares, frequently at a depth of twenty feet in a shaft" (Bryant). In California it is resident as far north as Sebastopol. It ranges northward in summer along the Yukon River to the Arctic Circle, and southward in winter, on the plateau of Mexico, to Puebla and central Vera Cruz.[1]

[1] A. O. U., Check List, 2d ed., 1895, 185.

Sayornis nigricans (Swains.).

Black Phoebe.

Sayornis nigricans Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 303 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 542 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 290 (Cape St. Lucas; Cape Region).

Sayornis nigricans semiatra (Vigors) has been recently resuscitated by Mr. Nelson [1] and adopted as a good subspecies in the Tenth Supplement of the A. O. U. Check List. It is said to inhabit the "Pacific coast of Mexico and the United States from Colima to Oregon, including most of Arizona," and to have the "under tail-coverts pure white," while true *nigricans* is supposed to be confined to Texas, New Mexico, southeastern Arizona, and the interior and eastern parts of Mexico, and to have the corresponding feathers "white more or less broadly striped with dusky." From this it would appear that the bird of Lower California should be *semiatra*, but of my mature specimens (thirty-one in number) from the Cape Region, not one has the under tail coverts wholly immaculate, while the greater number possess conspicuous dusky shaft stripes on these feathers. The same thing is true in a general way of my examples from California, although one of the latter really does lack all trace of the markings just mentioned. Most of my numerous specimens from regions included within the habitat assigned to *nigricans* by Mr. Nelson undeniably show rather more of this dusky than is possessed by the average bird from the Pacific coast, but the difference seems to me too trifling and inconstant to deserve anything more than passing notice. Scarcely more important, in my estimation, is the fact that the Black Pewees of the Cape Region are usually, but by no means invariably, distinguishable from those of all other regions represented in my collection by their slightly larger (broader as well as longer) bills and comparatively faded, brownish coloring.

Mr. Belding gives this species as rare in the Cape Region. Mr. Frazar did not take it at La Paz, but further southward it is generally distributed and rather common at all seasons, ranging from San José del Cabo on the coast to the summit of the Sierra de la Laguna. It prefers the hilly country at the bases of the mountains, however, and is seldom seen far from water. Young on wing were met with at Triunfo in April. At Comondu Mr. Bryant found eggs "March 13, and full-fledged young April 9, 1888."

The Black Phoebe is found from Oregon to southern Mexico on the Pacific slope.

[1] Auk, XVII. 1900, 124, 125.

Contopus richardsonii peninsulae Brewst.

Large-billed Wood Pewee.

[*Pyrocephalus*] *richardsoni* Gray, Hand-list, pt. I. 1869, 362, no. 5,510, part.
[*Contopus virens*] var. *richardsonii* Coues, Key N. Amer. Birds, 1872, 174, part.
Contopus virens, var. *richardsonii* Coues, Check List, 1873, 53, no. 255 a, part.
Contopus richardsoni Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 31, no. 321, part.
Contopus virens richardsoni Coues, Check List, 2d ed., 1882, 70, no. 383, part.
Contopus richardsonii A. O. U., Check List, 1886, 234, no. 462, part.
Contopus richardsonii peninsulae Brewster, Auk, VIII. 1891, 144, 145 (orig. descr.; types from Sierra de la Laguna and Triunfo). A. O. U. Comm., Auk, IX. 1892, 106, no. 462 a; Check List, 2d ed., 1895, 187, no. 462 a. Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 598 (descr.; S. Lower Calif.).
C.[*ontopus*] *v.*[*irens*] *richardsoni* Coues, Key N. Amer. Birds, 4th ed., 1894, 440, part.
Horizopus richardsonii peninsulae Oberholser, Auk, XVI. 1899, 333 (synonymy).
[*Contopus virens*] var. *peninsulae* Dubois, Synop. Avium, fasc. IV. 1900, 249 (Basse-Californie).
[*Horizopus*] *peninsulae* Sharpe, Hand-list, III. 1901, 142.

This near ally of *C. richardsonii* was discovered by Mr. Frazar on the Sierra de la Laguna, where it appeared about the middle of May, the males arriving nearly two weeks in advance of the females. It soon became very common, frequenting open places in the woods, and usually taking its station at the extremity of some dead branch. Its note is "a sharp, cutting *pee-ee-e*, the second syllable with a falling, the last with a rising, inflection." On June 9 while descending the mountain Mr. Frazar found these Flycatchers common to its base as well as afterwards at Triunfo and San José del Rancho. An adult female killed on June 20 at Triunfo was incubating, but no nests were found.

The Large-billed Wood Pewee has not been reported as yet from anywhere outside the Cape Region, but if, as the above evidence indicates, it is a migratory bird, it must also occur in Mexico and Central America.

Mr. Bryant records *C. richardsonii* from San Sebastian and a few localities in the northern part of Lower California.

Empidonax difficilis Baird.

Western Flycatcher.

(?) *Empidonax difficilis* Belding, Proc. U. S. Nat. Mus., V. 1883, 542, part (Cape Region); VI. 1883, 348, part (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 291, part (Cape Region).

Of true *E. difficilis* I have seen only six Lower California specimens, all of which were collected by Mr. Frazar, — one at Santiago on November 15, the

other five at San José del Rancho in December. Mr. Belding's mention of *difficilis* as "rare" may refer partly or wholly to the next species, which, of course, had not been separated at the time Mr. Belding's papers were written.

It is not probable that *E. difficilis* breeds anywhere in the Cape Region, although it may possibly do so in the extreme northern portions of the Peninsula. According to Mr. Bryant, it has been met with by Mr. Anthony at Valladares, during the autumnal migration, and by Mr. Belding in wooded cañons north of San Pedro Martir in May. It is abundant in summer throughout most of California and regularly ranges northward into British Columbia, while a single specimen has been taken at Sitka, Alaska.[1] In winter, it is said to go as far southward as Costa Rica.

Empidonax cineritius Brewst.

St. Lucas Flycatcher.

Empidonax flaviventris Cooper, Orn. Cal., 1870, 328, 329, part (Cape St. Lucas). Coues, Check List, 1873, 53, no. 259, part.

[*Empidonax*] *flaviventris* Coues, Key N. Amer. Birds, 1872, 175, 176, part.

Empidonax difficilis Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 31, no. 323, part. (?) Belding, Proc. U. S. Nat. Mus., V. 1883, 542, part (Cape Region); VI. 1883, 348, part (Victoria Mts.). A. O. U., Check List, 1886, 234, 235, no. 464, part. (?) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 291, part (Cape Region, etc.).

Empidonax flaviventris difficilis Coues, Check List, 2d ed., 1882, 71, no. 389, part.

Empidonax cineritius Brewster, Auk, V. 1888, 90, 91 (orig. descr.; types from La Laguna). A. O. U. Comm., Suppl. to Check List, 1889, 10; Check List, abridged ed., 1889, and 2d ed., 1895, no. 464.1. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 291 (La Laguna; Comondu, etc.). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas). Allen, Auk, X. 1893, 142 (tropical type). Anthony, Zoe, IV. 1893, 238 (San Pedro Martir); Auk, XII. 1895, 140 (San Fernando), 390 (Cuymaca Peak, San Diego co., Calif.). Coues, Key N. Amer. Birds, 4th ed., 1894, 901 (descr.; Lower Calif.). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 301 (La Laguna). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 599 (descr.; Lower Calif.).

E.[*mpidonax*] *f.*[*laviventris*] *difficilis* ? Coues, Key N. Amer. Birds, 4th ed., 1894, 442, part.

E.[*mpidonax*] *difficilis* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 340, part.

[*Empidonax bairdi*] var. *cineritia* Dubois, Synop. Avium, fasc. IV. 1900, 248 (California).

[*Empidonax*] *cineritius* Sharpe, Hand-list, III. 1901, 139.

Some of my winter specimens of this species appear to differ from those of *difficilis* only in respect to size and proportions and in having the general coloring duller — less olivaceous above and on the breast and sides, lighter

[1] Nelson, Rept. Nat. Hist. Coll. Alaska, 1887, 162.

yellow on the throat and abdomen. The bill of *cinerítius* is almost invariably much narrower than that of *difficilis*.

The St. Lucas Flycatcher is resident in the Cape Region, where it is not uncommon. Mr. Frazar found it in the greatest numbers on the Sierra de la Laguna in May and early June. He also obtained specimens at San José del Rancho in July and at La Paz in February and March. Mr. Bryant has taken it at Comondu, and San Benito and Santa Margarita Islands, while on San Pedro Martir Mr. Anthony found it "very common all over the mountain, especially along the streams and in the willows. It was evidently nesting" at the time of his "visit in May, but no eggs were taken." He also states that it occurs sparingly near the mine and about the mission at San Fernando, where he thinks it nests "in the thick mesquite growth." It probably replaces *E. difficilis* in the breeding season throughout the greater part of Lower California.

Its summer range extends northward into southern California, where "in the pine growth on Cuymaca Peak," in San Diego County, "between the altitudes of 4,000 feet and 6,000 feet," Mr. Anthony took several specimens, which, without doubt, were breeding, during the latter part of June, 1895.

Empidonax griseus Brewst.[1]

Gray Flycatcher.

Empidonax obscurus (not *Tyrannula obscura* Swainson) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 303 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 542 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 292 (Cape Region).

Empidonax griseus Brewster, Auk, VI. 1889, 87–89 (orig. descr.; types from La Paz; crit.; Triunfo; San José del Cabo). Bryant, *Loc. cit.* (La Paz; Triunfo; San José del Cabo). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 320, 321 (near La Paz; Triunfo; San José del Cabo).

Mr. Frazar found the Gray Flycatcher at La Paz in February and March; at Triunfo in April and December; at San José del Rancho in December; and at San José del Cabo in October and November. His latest spring specimen is

[1] In retaining this name I have acted in opposition to the advice of my friend, Mr. Nelson, who considers it a synonym of *E. canescens* Salvin and Godman. The plate and description of the latter in the Biologia Centrali-Americana certainly seem to fit my bird closely. When I visited England in 1891, however, I took with me either the types or typical specimens of most of the Mexican birds which I had up to that time described, and showed them to Mr. Salvin. My impression is that *E. griseus* was among the number, and that Mr. Salvin passed it as distinct from *canescens*. It is not improbable that I am mistaken in so thinking, but until the matter can be definitely settled by actual comparison of specimens, it seems to me wiser to retain the name *griseus* (published two months later than *canescens*) rather than to adopt the name *canescens* at the risk, however slight, of having to change back again later.

dated April 21, his earliest autumnal bird October 29. Mr. Belding mentions *E. obscurus* (= *wrightii*) [1] as "rare in summer," but this statement requires confirmation. Mr. Frazar did not take *E. wrightii* at all, and his experience with *E. griseus* furnishes no evidence that the latter passes the summer in the Cape Region. To the northward Mr. Bryant has taken it on Santa Margarita Island in February and at Comondu in March, but he does not mention seeing it after the latter month, and Mr. Anthony apparently failed to detect it at any season. Hence it becomes an interesting question where the numerous birds which winter in the Cape Regions breed.

E. griseus nests commonly in southern Arizona, and according to Mr. Nelson as far south in the interior of Mexico as the southern extremity of the table land. I have seen perfectly typical examples which were collected in Los Angeles county, California, by Mr. Grinnell, who reports that the species is apparently resident in this county, being found in small numbers in the neighborhood of Pasadena and El Monte in autumn, winter, and spring, and not uncommonly in summer, at elevations of from 7,500 to 8,500 feet "in one limited locality, on the slopes of Mt. Waterman," where full-fledged young were obtained as early as July 11, 1897.[2]

Pyrocephalus rubineus mexicanus (Scl.).

Vermilion Flycatcher.

Pyrocephalus rubineus mexicanus Belding, Proc. U. S. Nat. Mus., V. 1883, 542 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 292 (Cape Region).

With the exception of a single specimen seen at La Paz on February 3, the Vermilion Flycatcher was observed by Mr. Frazar only at San José del Cabo in October and November, and at Santiago during the latter month. "It was confined to the vicinity of water and was not common." Mr. Bryant "met with it only in the latitude of Comondu, usually in cultivated gardens." These facts indicate that it is chiefly restricted to the southern portions of the Peninsula, although it is known to occur in southern California as far north as Ventura County. Its southward range extends to Guatemala. It probably breeds in the Cape Region of Lower California, but of this there is, at present, no definite proof.

Aphelocoma californica hypoleuca Ridgw.

Xantus's Jay.

Cyanocitta californica (not *Garrulus californicus* Vigors) Baird, Cat. N. Amer. Birds, 1859, no. 437, part; Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St.

[1] Since writing the above, I have examined two specimens (No. 86,335 and No. 86,336, Coll. U. S. Nat. Mus.) which were taken by Mr. Belding at La Paz, one on December 18, 1881, the other on January 5, 1882. Both prove to be typical *griseus*.

[2] Grinnell, Pub. II. Pasadena Acad. Sci., 1898, 31.

Lucas), 305 (crit.; Cape St. Lucas). Cooper, Orn. Cal., 1870, 302, 303, part (crit.; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 288–290, part (crit.; Cape St. Lucas).

[*Cyanurus*] *californicus* Gray, Hand-list, pt. II. 1870, 4, no. 6,092, part.

[*Aphelocoma floridana*] var. *californica* Coues, Key N. Amer. Birds, 1872, 166, part (Pacif. coast).

Aphelocoma floridana, var. *californica* Coues, Check List, 1873, 49, no. 236 b, part.

Aphelocoma californica (not *Garrulus californicus* Vigors) Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 30, no. 293, part; Proc. U. S. Nat. Mus., V. 1883, 541 (crit.; Lower Calif.). Belding, *Ibid.* (Cape Region); VI. 1883, 348 (Victoria Mts.). A. O. U., Check List, 1886, 242, 243, no. 481, part. Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1887, 493, part (Cape St. Lucas).

Aphelocoma floridana californica Coues, Check List, 2d ed., 1882, 67, no. 356, part.

A.[phelocoma] californica hypoleuca Ridgway, Man. N. Amer. Birds, 1887, 356 (orig. descr., "based on many specimens from Cape St. Lucas, La Paz, and contiguous localities").

Aphelocoma californica hypoleuca, A. O. U. Comm., Suppl. to Check List, 1889, 11; Check List, abridged ed., 1889, and 2d ed., 1895, no. 481 a. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 24 (descr. nest and eggs from San Ignacio), 293 (Cape Region and n. to 28°). Coues, Key N. Amer. Birds, 4th ed., 1894, 901 (descr.; vicinity of Cape St. Lucas). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 378 (vicinity of Cape St. Lucas; descr. eggs taken by Xantus near Cape St. Lucas).

[*Aphelocoma californica*] var. *hypoleuca* Dubois, Synop. Avium, fasc. VII. 1901, 512 (Basse-Californie).

The characters enumerated by Mr. Ridgway are fairly well maintained in the large series of specimens of Xantus's Jay collected by Mr. Frazar, although none of them are quite constant. As a rule, however, *hypoleuca* is considerably smaller than *californica*, the bill is longer as well as stouter, the blue, especially on the wings and tail, is much lighter, and the under parts are whiter. There is also usually more blue on the sides of the head, especially over the auriculars.

Individual variations: — The blue of the head varies greatly in shade, ranging from marine blue to china blue. In some of the June specimens it is entirely worn off most of the feathers of the head, excepting those on the forehead and sides of the crown, the remainder of the head above and on the sides being plain brown. The blue of the wings and tail is much less variable than that of the head. The brown of the back and scapulars is pale and grayish in some birds, in others deep and rich with a tinge of sepia. A few specimens have the scapulars and hind back strongly bluish: many show exceedingly faint dusky bars on the tail, as well as sometimes on the wing coverts.

Juvenal plumage: — *Male* (No. 16,528, Triunfo, June 27, 1887). Upper parts, with the sides of the head and neck, plain, dull drab, tinged with plumbeous on the crown and forehead, with gray on the rump and upper tail coverts; a short, inconspicuous, grayish stripe above the eye extending from

its anterior corner backwards about half an inch; under parts grayish white, bordered on the sides of the throat and breast with brownish drab, which also forms a narrow and rather obscure band across the breast; wings and tail as in the adult, but with the greater covert tipped, and some of the middle and lesser coverts tinged, with drab. Bill, tarsi, and feet black.

Autumnal plumage: — This differs only slightly, if at all, from the nuptial plumage. Indeed, the birds which I take to be adult are practically inseparable from unworn spring specimens. Others, probably young, have the blue paler, the brown of the scapulars and back duller or more ashy.

This, the only Jay known to inhabit the Cape Region, is very common and generally distributed there, being found almost everywhere from the sea-coast to the tops of the highest mountains. About La Paz it nests in March, but the birds seen by Mr. Frazar on the Sierra de la Laguna in May and early June were in flocks and showed no signs of having bred that season or of being about to breed. They probably leave the mountains before the beginning of winter and seek more sheltered haunts in the valleys and foothills at lower elevations, for Mr. Frazar did not find a single individual on the Sierra de la Laguna during his second visit, in the latter part of November, 1887.

Mr. Bryant found a nest of this Jay "a few miles southward from San Ignacio on April 12, 1889. The nest was built about three metres high in a green acacia near the trail. The female was sitting, and did not fly until preparations for climbing the tree had commenced. The nest was in quite an exposed situation amongst scant twigs on a horizontal branch. It is composed of small loosely laid dry twigs, and a shallow receptacle lined with fibre and horsehair.

"The eggs, three in number (set No. 899, coll. of W. E. B.), contained small embryos. They are more finely spotted than some similar jay's eggs, with shell spots of pale lilac-gray and surface spots of pale olive-green. The ground color is dull, pale glaucous green. They measure 27.5 × 20.5; 27.5 × 21; 27 × 21 millimetres."

Xantus's Jay is confined to Lower California. It was first seen by Mr. Bryant "among the mangroves of Magdalena Island, and along the mangrove-bordered *estero* to San Jorge, and northward as far as lat. 28°." On San Pedro Martir mountain it is replaced by *obscura*, a race doubtfully distinct from *californica*. The latter bird is said to occur still further to the northward on the Peninsula, "about Ensenada and to the eastward."[1]

Corvus corax sinuatus (Wagl.).

American Raven.

Corvus corax carnivorus (not *Corvus carnivorus* Bartram) Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region); VI. 1883, 348 (Victoria Mts.).

[1] Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 293.

Corvus corax sinuatus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 293 (Cape Region).

Raven, Bryant, Zoe, II. 1891, 191 (San José del Cabo).

Although the Raven is common throughout the Cape Region during the entire year it is most numerous there in winter, according to Mr. Frazar. Probably a good many migrants come down from the North at that season, or the apparent increase may be due merely to concentration at points where food is abundant. In December Mr. Frazar observed twenty or thirty gathering nightly to roost in a tree on the summit of the Sierra de la Laguna.

Mr. Bryant says that the Raven extends throughout "the entire peninsula and shore islands." Its general range on the Pacific coast stretches from Guatemala to Alaska.

Molothrus ater (Bodd.).

Cowbird.

A male Cowbird taken by Mr. Frazar at Santiago on November 22, 1887, seems to be perfectly typical *ater*, which has not been hitherto reported from any portion of Lower California. Mr. Belding gives several records of the occurrence of this form in eastern California, but adds that "no Cowbirds have ever been collected in California, west of the Sierra Nevada, as far as I am aware."[1] *M. ater* is said to migrate into Mexico, but just how far to the southward is not accurately known.

Molothrus ater obscurus (Gmel.).

Dwarf Cowbird.

Molothrus ater obscurus Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo), 547 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 294 (San José del Cabo). Bendire, Rept. U. S. Nat. Mus., 1892–1893, 1895, 598 (San José del Cabo); Life Hist. N. Amer. Birds, pt. II. 1895, 441 (San José del Cabo).

This is the characteristic Cowbird of the Cape Region, where, however, it appears to be comparatively uncommon and is not known to breed. Mr. Frazar met with it only in autumn at San José del Cabo and Santiago, taking his first specimen on September 30 at the former locality, where Mr. Belding had previously noted it in April and May, 1882. Mr. Bryant does not appear to have observed it to the northward, but says that Mr. Anthony "saw what he supposes was this Cowbird at San Quintin." It is common in southern Arizona, but is not known to enter California.

[1] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 118.

Xanthocephalus xanthocephalus (Bonap.).

Yellow-headed Blackbird.

Xanthocephalus icterocephalus Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo).

Xanthocephalus xanthocephalus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 294 (San José del Cabo).

This Blackbird is known to occur in the Cape Region only in autumn, winter, and early spring. At San José del Cabo Mr. Belding found it rare in April, and Mr. Frazar noted it as not common in September and October. The latter observer also met with a number of birds at Santiago in November and a single individual at La Paz on February 15.

Mr. Bryant does not mention seeing the Yellow-headed Blackbird in the central or northern portions of Lower California, but cites Mr. Anthony as authority for the statement that it is "very common along the coast during migrations." It probably does not pass the summer anywhere on the Peninsula, for it is not known to breed south of Santa Barbara in California. It migrates into western Mexico, at least as far to the southward as Mazatlan.

Agelaius phoeniceus sonoriensis Ridgw.

Sonoran Red-wing.

Agelaius —— Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 305 (San José).

Agelaeus phoeniceus (not *Oriolus phoeniceus* Linnaeus) Belding, Proc. U. S. Nat. Mus., VI. 1883, 350 (La Paz and s.).

Agelaius phoeniceus (not *Oriolus phoeniceus* Linnaeus) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 294 (San José del Cabo).

The form *sonoriensis*, as far as my material shows, is very distinctly characterized, especially in the female, which differs markedly at all seasons from the female of *phoeniceus*. The six specimens collected by Mr. Frazar agree closely in size and general coloring with specimens from northwestern Mexico, excepting that all three of my Lower California females have the capistrum, throat, and breast strongly tinged with salmon pink, a peculiarity which I do not find in Mexican birds.

Mr. Frazar saw the first Sonoran Red-wings at San José del Cabo on August 28, when an adult male was killed from a flock of about eighty. None were observed afterwards until October 30, when two old males were seen flying over the river. On November 4 two were shot from a flock of six, all of which seemed to be young birds. At Santiago one was seen on November 15, and five were noted on the 27th. Mr. Belding's mention of *A. phoeniceus*, as rare in the "vicinity of La Paz and southward," doubtless relates to this form, which is replaced by the closely allied subspecies *neutralis* in the northern portions of the Peninsula, where *A. tricolor* and *A. gubernator californicus* have also been found.

Sturnella magna neglecta (Aud.).

Western Meadowlark.

Sturnella neglecta Belding, Proc. U. S. Nat. Mus., VI. 1883, 351 (La Paz and s.).
Sturnella magna neglecta Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 294 (San José del Cabo; La Paz).

Mr. Belding gives the Western Meadowlark as "rare" in the "vicinity of La Paz and southward." It was met with by Mr. Frazar only at San José del Cabo and Santiago. At the former place it arrived on October 14, after which a few were seen at intervals during the remainder of October and the first half of November. At Santiago a solitary bird was killed on November 19. In the central and northern portions of the Peninsula it has been found "upon a narrow strip of sand-hills between the *estero* and the ocean, about seventy miles from Magdalena Island"; near Pozo Grande; "within a few days' travel of San Quintin"; on Cerros Island; and near San Rafael (Bryant). At San Fernando, according to Mr. Anthony, it is "not uncommon during winter at the mission, but very rare, if present, in summer."[1] These facts indicate that the bird occurs rather generally but sparingly and more or less locally over the entire Peninsula, probably breeding in the central and northern portions, and visiting the Cape Region only in autumn and winter. Still further northward it is common from southern California to British Columbia, and it even reaches Alaska (Sitka), according to Mr. J. K. Lord.[2] Southward it ranges "through central and western Mexico to Guanajuato and Jalisco."[3]

Icterus parisorum Bonap.

Scott's Oriole.

Icterus parisorum Baird, Proc. Acad. Nat. Sci. Phila, 1859, 301 (Cape St. Lucas), 305 (descr. female; Cape St. Lucas). Cassin, *Ibid.*, 1867, 54 (Lower Calif.). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 189, 190 (abundant at Cape St. Lucas, with breeding habits). Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region); VI. 1883, 348 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 295 (Cape Region). Bendire, Life Hist. N. Amer. Birds, pt. II. 1895, 473 (breeding habits in Cape Region).

In my large series of specimens of this Oriole, there is so much variation, affecting, apparently, adult as well as young birds, that it is impossible to describe the different plumages under the usual stereotyped headings. Both sexes seem to have two distinct phases of coloring, certainly common to all seasons, and having no obvious connection with the age of the individual. Thus a certain

[1] Auk, XII. 1895, 140.
[2] Naturalist in Vancouver Island and British Columbia, II. 1866, 147.
[3] A. O. U., Check List, 2d ed., 1895, 206.

percentage of males, not greater, apparently, in autumn than during the breeding season, have the wings and tail light grayish brown, the rump and posterior under parts, as well as sometimes the entire upper parts also, dull orange-yellow, tinged with brown on the back. In such specimens the throat, jugulum, and breast are always black, although the sides of the neck are often pure olive-yellow. It is possible, of course, that this plumage is a mark of immaturity, but it occurs quite as frequently among breeding birds as with those taken in autumn, while several of the latter, which I take to be young, are distinguishable from others, certainly adult, only by having the feathers of the hind back tipped with ashy white, giving the plumage of this part a scaled appearance. Traces of this white tipping also occur on one or two of my spring specimens. Both young and old in autumn differ from spring birds in having the yellow of the rump and under parts deeper (gamboge rather than lemon) and the inner secondaries broadly and conspicuously bordered on their outer webs with pure white, this always extending around the tips of the feathers and backward a little way along the edges of the inner webs. The greater coverts, also, are much more broadly white-tipped than in spring.

Mr. Ridgway describes the adult female of this species[1] as wholly without black, but all of my fifteen spring specimens from Lower California have the entire throat, jugulum, and breast unmixed black, of a duller shade, however, than in the male. Three of them also have the whole top and sides of the head and nape black, and the back dark slaty brown without admixture of olive or greenish. The others have the head above and on the sides, as well as the sides of the neck, more or less olivaceous, while in two or three the chin and sides of the throat are also mixed with grayish or olive. Several spring females in my collection and that of the American Museum, from Arizona and northwestern Mexico, as well as two autumnal females from Lower California, agree closely with Mr. Ridgway's description. A third autumnal female from Lower California differs from these specimens only in having a cluster of black spots on the breast. The nine females which make up the balance of my autumnal series from Lower California do not differ appreciably from the spring birds of the same sex above described, excepting that, like the males in autumn, they have the white bordering the wing coverts and secondaries much broader and purer than in spring, and the black feathers of the head, throat, etc., more or less tipped with olivaceous.

The case may be stated more briefly and generally as follows: — Eight of the forty-seven spring males and four of the twenty-five autumnal males have the under parts as well as the top of the head and the back more or less olivaceous. Three of the twenty-four spring females are wholly without black on the head, throat, and breast. Two of the thirteen autumnal females lack all traces of black on these parts, while a third has only a cluster of black spots on the breast.

Juvenal plumage: — Both sexes closely resemble the plain olive phase of the adult female, from which they differ only in having the upper parts browner,

[1] Man. N. Amer. Birds, 1887, 373.

the light edging on the wing coverts and secondaries much broader and more or less tinged with yellowish. Some of the males show a few black feathers, possibly of the coming autumnal plumage, on the breast and throat.

General remarks: — Upon comparing spring specimens in full plumage from Lower California with others from Arizona and northwestern Mexico, I find two slight differences which seem to be correlated with geographical distribution. The yellow of the rump and under parts in the male of the Lower California bird is lemon, whereas in all my Arizona skins it is gamboge. The posterior outline of the black on the breast is also more clearly defined in the Lower California specimens than in those from Arizona. In the latter many of the posterior black feathers are tipped with yellow. Mexican examples appear to be intermediate in both these respects between the Arizona and the Lower California specimens. I do not find any constant differences in size or proportions between the birds from the several regions just mentioned. There is perhaps a greater tendency to black on the head, throat, etc., in the female from Lower California than in that from Mexico and Arizona, for, as already mentioned, all the *spring* females before me which wholly lack the black are from Arizona or western Mexico.

In the Cape Region Scott's Oriole is resident, but perhaps somewhat more numerously represented in summer than in winter. At the former season it is very generally distributed, occurring almost everywhere from the lowlands along the coast to the summits of the higher mountains. It shows a marked preference, however, for dry, barren country such as that about Triunfo, where Mr. Frazar met with it in the greatest numbers. On July 8 at Pierce's Ranch he found a nest "containing three young, nearly large enough to fly. This nest was made of the yellow fibre of palm leaves, and was lined with a few long, black horse-hairs. It was placed among the densest foliage of a fig-tree at a eight of about eight feet, and rested on a few small twigs, but seemed to be fastened only to some twigs above, from which it was suspended. It was not deep, for the heads of the young appeared above the upper edge."

Scott's Oriole has been found at various places in the central and northern portions of the Peninsula as well as near San Diego and Los Angeles, California, the locality last named being perhaps the most northern one to which it ever extends its summer range. In the mountain portions of Lower California it is said by Mr. Bryant, on the authority of Mr. Anthony, "to prefer the low hills near the coast south of San Quintin, where it nests in the thorny branches of the candlewood (*Fouquiera columnaris*)."

Scott's Oriole also breeds in southern Arizona, New Mexico, and western Texas. "In winter it passes southwards as far as Central Mexico in the States of Puebla and Vera Cruz; and Sumichrast includes it amongst the birds of the temperate and alpine regions of the latter State. It breeds, he says, in the temperate region, and is found as high as between 5,000 and 6,000 feet above the sea in the neighborhood of Orizaba, and at even higher altitudes in the plateau."[1]

[1] Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1887, 463, 464.

Icterus cucullatus nelsoni Ridgw.

Arizona Hooded Oriole.

Icterus cucullatus (not of Swainson) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 305 (Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 194, part (abundant at Cape St. Lucas, with breeding habits). Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region); VI. 1883, 345 (Cape Region).

Icterus nelsoni Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1887, 472, 473 (La Paz; abundant and breeding at Cape St. Lucas).

Icterus cucullatus nelsoni Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 295 (Cape Region); Zoe, II. 1891, 188 (San José del Cabo).

The characters pointed out by Mr. Ridgway are well maintained in the large series collected by Mr. Frazar, all of the males of which can be readily distinguished from Texas specimens by the absence of any pronounced orange tint in the yellow of the head, rump, and under parts. Most of my Lower California skins have the yellow of the under parts duller and that of the head with a more decided tinge of saffron, than in Arizona examples. In fact, the Lower California bird seems to represent the extreme type of divergence from true *cucullatus*.

Individual variations. Spring plumage: — Adult male. The yellow varies considerably in tint, especially on the head where it is often strongly tinged with saffron. This color seems to be confined to the tips of the feathers, for, as the season advances and the plumage wears, the head becomes nearly pure yellow. One bird in my series has an elongated patch of yellow on the inner web of each outer tail feather beginning about half an inch from its tip, and extending backward nearly three fourths of an inch. There is an immature (or perhaps dichromatic) phase of plumage of the male (corresponding to that of the Orchard Oriole), in which the bird resembles the adult male only in having the full black "hood," the coloring otherwise being almost precisely as in the female, although the yellow of the under parts is sometimes richer or less greenish than in the latter. My series contains three specimens illustrating this condition.

Adult female. One of my specimens (No. 16,497, Triunfo, April 13. 1887) has an obscure blackish patch in the middle of the breast. Traces of this exist in one or two others, but as a rule the under parts are essentially plain.

Autumnal plumage: — Adult male (No. 16,518, San José del Cabo, October 20, 1887). Yellow much deeper and browner than in spring birds — on the crown, sides of head and nape, rump and upper tail coverts, heavily overlaid with olive, on the breast and sides of the body with raw sienna; black of the head and breast pure; that of the back and scapulars nearly obscured by grayish olive which forms a broad tipping on all of the feathers; white edging of wing coverts, secondaries, etc., broader than in the spring bird and tinged

with cream color; all the tail feathers tipped with brownish white. Another adult male taken on December 15, at Triunfo, is similar, but less brownish or olivaceous on the head, neck, and under parts.

Young female (No. 16, 496, Triunfo, December 7). Differing from the spring female in having the entire upper parts more olivaceous; the lower parts yellower; the greater and middle coverts, as well as the inner secondaries, more broadly tinged with white; the base of the upper mandible flesh colored to a little beyond (*i. e.*, anterior to) the nostril.

This Oriole occurs throughout Lower California, where it is a much commoner bird than the preceding species. Mr. Bryant has found it on Santa Margarita Island in January, and Mr. Frazar took a few specimens at La Paz in February, and others at Triunfo in December. The latter observer believes, however, that by far the greater number leave the Peninsula before winter, "returning about the middle of March." He saw only one individual on the Sierra de la Laguna, but observed many in the cañons at its base. The species was most numerously represented about Triunfo where it frequented trees near water, and began nest building late in June. The first eggs, a set of four, were found at San José del Rancho on July 14; during the following ten days, six nests and sets of eggs were obtained. Mr. Frazar notes three as the usual "clutch," but four of the nests which he took contain four eggs each.

The nests are essentially uniform in size and shape, and in these respects similar to the nest of the Baltimore Oriole, although smaller and decidedly shallower. All are largely composed of a fine, straw-colored, jute-like fiber firmly interwoven, and four contain only this material, but the fifth is lined with horsehair, and the sixth with cotton and a few feathers. One was attached to the under side of a palm-leaf, two to the branches of orange trees, three were in bushes, and one was suspended at the end of a drooping branch of some deciduous tree. They were placed at heights above the ground varying from four to eight feet. Mr. Xantus found a nest "on an aloe four feet high," another on the stem of a *Yucca angustifolia* six feet from the ground, a third in moss, "hanging out of a perpendicular bluff, on the sea-coast," and a fourth "in a convolvulus, on a perpendicular rock fifty feet high."[1]

The twenty-five eggs taken by Mr. Frazar vary considerably in size and shape. Some are ovate, others elongate ovate, and still others elliptical ovate. The ground color is creamy white; the markings are spots, blots, dashes, or irregular pen-like lines of lavender, light reddish or dark purplish brown, arranged chiefly about the larger ends. These eggs average .89 × .61 with extremes of .96 × 60, .94 × .64, .83 × .64 and .85 × .58.

The Arizona Hooded Oriole is common in southern California and is found as far north as Santa Barbara. It also inhabits southern Arizona and western Mexico as far south as Mazatlan.

[1] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 194.

Scolecophagus cyanocephalus (Wagl.).

Brewer's Blackbird.

Scolecophagus cyanocephalus Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo), 547 (San José). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 295 (San José del Cabo).

Mr. Frazar took only two specimens of Brewer's Blackbird, the first at La Paz on February 15, the second at San José del Cabo on October 28; his notes also refer to a flock seen at the latter place on October 15. Mr. Belding, in the list of birds "found at San José del Cabo from April 1 to May 17," characterizes the species as "common, breeding," but this is almost certainly a mistake, for on the next page he states that it was "rarely seen in May." Mr. Bryant says nothing about its breeding in the central or northern portions of Lower California, but merely mentions two flocks seen near Comondu in March, 1888, and small flocks observed at San Ignacio about the middle of April, adding "Mr. Anthony has found them at times in small flocks on San Pedro Martir."

The latter observer has since reported that in 1893 they were "common in all of the lower valleys," about San Pedro Martir and that "at San Vicente a large colony had taken possession of the old olive trees at the abandoned mission and dozens of nests with eggs were seen on April 28. At La Grulla they were nesting in the pines in early May."[1] Mr. Anthony also found a few birds near San Fernando, where they "were probably nesting at the mission, as they were seen until the last of June."[2]

Brewer's Blackbird breeds throughout California, where it also winters, at least as far north as Contra Costa and Alameda counties. Its summer range on the Pacific coast extends into British Columbia, and it migrates south in winter to the table-lands of Mexico.

Carpodacus mexicanus ruberrimus Ridgw.

St. Lucas House Finch.

Carpodacus frontalis (not *Fringilla frontalis* Say) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 304 (Cape St. Lucas). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1886, 421, 422, part (crit.; Cape St. Lucas).

Carpodacus frontalis, var. *rhodocolpus* (not *Carpodacus rhodocolpus* Cabanis) Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 468, part (descr. Cape St. Lucas bird).

Carpodacus frontalis rhodocolpus Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Ridgway, *Ibid.* (descr. ad. males).

Carpodacus frontalis ruberrimus Ridgway, Man. N. Amer. Birds, 1887, 391, footnote (orig. descr.; provis. name for S. Lower Calif. bird, based on Cape St. Lucas

[1] Zoe, IV. 1893, 239. [2] Auk, XII. 1895, 140.

specimen). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 23, 24 (descr. nest and eggs from Comondu), 297 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas).

C.[arpodacus] mexicanus ruberrimus Ridgway, *Loc. cit.*, 594.

Carpodacus mexicanus ruberrimus Ridgway, *Loc. cit.*, 592. Bryant, *Loc. cit.*, 296 (Cape Region).

C.[arpodacus] ruberrimus McGregor, Condor, III. 1901, 13, 14 (dichromatism in birds from San José del Cabo).

Mr. Ridgway has claimed [1] that the House Finch of Lower California differs from *C. m. frontalis:* "(1) in the smaller general size, (2) rather more swollen bill, and (3) greater extension of the red." That the first and second of those characters are so variable as to be practically worthless, is shown conclusively by the large series collected by Mr. Frazar, but the extreme extension of the red is sufficiently constant in these specimens to fully warrant the recognition of the Lower California bird under the appropriate name which Mr. Ridgway has proposed.

I cannot, however, endorse the still more recent separation which Mr. Ridgway has made [2] of *Carpodacus mexicanus sonoriensis*, based on the bird of "Southern Sonora (north to Guaymas on the coast) and southeastern Chihuahua," which is said to differ from *ruberrimus* of Lower California only in having longer wings and tail and slightly smaller bill. It is true that, as a rule, my examples from the Cape Region are characterized by somewhat thicker or more swollen bills than are possessed by those which I have received from Guaymas and Alamos, Sonora, but the birds of the two regions, as represented in my collection, do not show (even by averages of measurements) the difference in respect to the length of the wings and tail which Mr. Ridgway has noted. I am therefore forced to regard them both as referable to the same form (*ruberrimus*).

Individual variations: — The males vary considerably in general size, and excessively in respect to the size and shape of the bill. The under tail coverts are always tinged with red, and in the majority of specimens this color extends well down over the abdomen, while in a few it spreads over the entire under parts, never, however, quite concealing the underlying white of the abdomen, anal region and under tail coverts nor obscuring the brown streaks on the sides. On the upper parts, the red invariably tinges the entire back as well as occasionally the sides of the head, excepting the lores. Its tint differs somewhat with different individuals and very considerably with season. In spring specimens it varies from poppy red to brilliant carmine, in autumn birds it is nearly uniform dull wine purple. Fully fifty per cent of my spring males and a few autumnal ones, also, show more or less yellow on the under parts, usually either on the breast or sides. Young males in autumn plumage are apparently not distinguishable from adults taken at the same season.

[1] Man. N. Amer. Birds, 2d. ed., 1896, 391, footnote.

[2] Birds N. and Midd. Amer., pt. I. 1901, 135, 136.

Nearly half of my adult females have the throat, and occasionally the breast, also, strongly tinged with carmine or purplish.

Young in juvenal plumage do not differ appreciably from those of *frontalis*.

This is one of the most abundant birds of the Cape Region, throughout which it is very generally distributed, save on the higher mountains, where it was not seen by either Mr. Belding or Mr. Frazar. The latter found it building at Triunfo the last week in April. Young of the first brood were on wing and their parents laying a second time by the last week in June. One pair had taken possession of an old nest of the Arizona Hooded Oriole, which was attached to the under side of a palm leaf.

Mr. Bryant says that most of the nests of the St. Lucas House Finch which he found at Comondu "were in palm trees and well nigh inaccessible;" but one was on the "under side of a veranda awning of an *adobe* house" among the branches of a vine. This nest was "adapted to the space wherein it was built, and composed of such material as was nearest at hand," viz., "rootlets, a bit of rag and considerable wild cotton," with "a few soft shreds from plant stalks, a quantity of wild cotton, and lastly, some horsehairs" as lining.

The only nest obtained by Mr. Frazar was taken on June 20 at Triunfo. It was built under the thatch of a roof, resting on one of the cross-beams to which the thatch was tied. It is composed almost wholly of coarse cotton string intermixed with a few horsehairs and stems of weedy plants. The eggs, three in number, are not distinguishable from those of *C. m. frontalis*. They measure respectively: .69 × .52, .71 × .55, and .73 × .55.

According to Mr. Bryant and Mr. Anthony, *C. m. ruberrimus* is replaced in the northern portion of Lower California by *C. m. frontalis*, the latter extending at least as far southward as latitude 28° N. The limit of northward extension of *ruberrimus* does not seem to have been accurately determined.

Astragalinus psaltria (Say).

Arkansas Goldfinch.

Astragalinus psaltria Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region); VI. 1883, 347 (Victoria Mts.).

Spinus psaltria Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 298 (Cape Region).

The Arkansas Goldfinch is very common in winter in the Cape Region, particularly in the low country near the coast. Mr. Frazar did not see it later than April 23, except on the Sierra de la Laguna, where it was common the last week in April and rare in May. A few pairs may breed on this mountain, for in April, 1889, Mr. Bryant found nests at Comondu. Mr. Anthony states that it is "a common resident about the northern part of the peninsula reaching the lower slope of the mountain" at San Pedro Martir.[1]

[1] Zoe, IV. 1893, 240.

Astragalinus psaltria breeds abundantly in California, especially in the central portions, but does not appear to go much further northward. It visits northwestern Mexico in winter.

Astragalinus psaltria arizonae (Coues).

Arizona Goldfinch.

This form is represented in Mr. Frazar's collection by a perfectly typical specimen — a male taken at San José del Cabo on October 31, 1887. It has not been previously reported from any part of Lower California, although it has occurred once before on the Pacific Coast (Haywards, Alameda county, California[1]). I have long entertained doubts regarding the wisdom of recognizing it as subspecifically distinct from *psaltria*. It is true that the two are sufficiently unlike to be distinguished at a glance, but they intergrade and do not appear to have separate habitats. Thus from southern Arizona and New Mexico and northern Mexico, the supposed home of *arizonae*, my collectors have invariably sent me at least a dozen specimens of *psaltria* to one of *arizonae*. Indeed, there seems to be no known region or locality which yields exclusively or even chiefly the so-called *arizonae*. These facts suggest that the latter name applies merely to aberrant specimens of *psaltria* which represent more or less well marked approaches to the wholly black-backed *A. p. mexicanus*, or, as Mr. Ridgway has lately put the case, that *arizonae* "is scarcely a definite form, but is rather a series of specimens connecting *A. p. psaltria* and *A. p. mexicanus*, hardly two examples being exactly alike, and the geographic range not very definite."[2]

Spinus pinus (Wils.).

Pine Siskin.

Chrysomitris pinus Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region).
Spinus pinus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 298 (Cape Region).

Mr. Belding's mention of "one observed . . . in a flock of *A. psaltria*, with which, in California, the species frequently associates" remains the only record for the Cape Region. Neither date nor locality is given in this connection, but in his Land Birds of the Pacific District[3] Mr. Belding states that "a single specimen," presumably the one just referred to, was "shot at La Paz, in Lower California, in the winter of 1882."

On San Pedro Martir, according to Mr. Anthony, the Pine Siskin is "well distributed through the pines . . . but undoubtedly not common; no nests were

[1] Emerson, Zoe, I. 1890, 44.
[2] Birds N. and Midd. Amer., pt. I. 1901, 116.
[3] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 139.

found "[1] It is a common winter resident in the central and northern portions of California, and it has been found breeding on the higher mountains as far south as Los Angeles county. Its southward range in winter extends into northern Mexico.

Pooecetes gramineus affinis Miller.

Oregon Vesper Sparrow.

Pooecetes gramineus confinis (not of Baird) Belding, Proc. U. S. Nat. Mus., VI. 1883, 350 (La Paz and s.).

Poocaetes gramineus confinis (not of Baird) Bryant, Proc. Calif. Acad. Sci., 2d. ser., II. 1889, 298 (near La Paz).

Mr. Frazar did not meet with any form of the Vesper Sparrow in Lower California, but Mr. Belding gives *confinis* as "rare" in his list of birds found in the "vicinity of La Paz and southward" in the winter of 1882–83. To this Mr. Bryant adds, "Several were shot near La Paz by Mr. Belding in the winter. I found them near Pozo Grande and obtained one specimen at Llanos de San Julian. Mr. Anthony has noted it as not uncommon on the northwest coast." Mr. Belding asserts that *P. g. confinis* is a rather common winter visitor to California, and that the closely allied *P. g. affinis* has also been frequently taken there at the same season.[2]

Mr. Grinnell mentions both forms as "common winter" visitants in his List of the Birds of Los Angeles county.[3] Mr. Ridgway, however, apparently regards practically all the birds which inhabit or visit the Pacific coast district from Oregon to Cape St. Lucas as *affinis*, for the only record of *confinis* for this region which he accepts as valid in his latest work[4] is that by Mr. Grinnell as above cited.

Ammodramus sandwichensis alaudinus (Bonap.).

Western Savanna Sparrow.

Passerculus sandwichensis alaudinus Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 350 (San José del Cabo). Ridgway, *Ibid.* (crit.).

Ammodramus sandwichensis alaudinus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 298, 299 (Cape St. Lucas; Cape Region).

A. s. alaudinus, like some of the other forms of the group to which it belongs, might be not inaptly termed a composite subspecies. In other words, it includes several well-marked but unnamed races which differ quite as much from one another and from the typical bird as does the latter from its nearest

[1] Zoe, IV. 1893, 240.

[2] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 140–142.

[3] Pub. II., Pasadena Acad. Sci., 1898, 36.

[4] Birds N. and Midd. Amer., pt. I. 1901, 184–187.

named and recognized allies. Mr. Frazar's specimens appear to represent two forms, — a small, slender-billed one which I take to be typical *alaudinus*, and a decidedly larger bird, which has a bill nearly as stout as that of *savanna*.

Mr. Frazar found the Western Savanna Sparrow in winter at La Paz, in autumn at Santiago and San José del Cabo. At the locality last named his first specimen was taken on August 27. During the next three weeks it was rather common, frequenting wet, grassy places. Mr. Bryant mentions seeing it only at San Jorge, where a few birds were observed in April. Mr. Anthony states that "a few winter about the base of San Pedro [Martir]."[1]

This subspecies occurs almost everywhere along the Pacific coast from northwestern Alaska to southern Mexico, breeding from California northward.

Ammodramus rostratus Cass.

Large-billed Sparrow.

Passerculus rostratus Cooper, Orn. Cal., 1870, 184 (Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 542, 543 (crit.; Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Ridgway, *Ibid.*, 537–539 (crit.; La Paz; Cape St. Lucas).

Ammodramus rostratus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 299 (San José del Cabo; La Paz; Cape St. Lucas, and other localities).

Although the Large-billed Sparrow is not mentioned in Mr. Frazar's notes, he must have found it in considerable numbers, for his collection contains no less than fifty-five skins, of which four were obtained at La Paz in January and February, sixteen at Carmen Island in early March, and thirty-five at San José del Cabo at various dates between August 31 and November 9. All the specimens thus far collected in the Cape Region have been taken in autumn, winter, or early spring. Indeed, there is no present evidence that the bird breeds anywhere in Lower California. Mr. Bryant met with it only in February, 1888, when a few were found "among the bushes on the sand hills near Magdalena village," and Mr. Anthony does not seem to have seen it at all. According to Dr. Cooper, it is found abundantly at all seasons at San Diego and San Pedro, California. At the latter place he "saw them, in July, feeding their young."[2] Mr. Belding, referring to this statement, says, "I could not find the species about San Diego Bay or False Bay in April and May, 1881, nor in April and May of the years 1884 and 1885, in the latter year having followed the coast nearly fifty miles north of San Diego without finding it. I last saw it at San Diego, March 10, 1884. Its nesting places and nesting habits are still unknown."[3]

I have two specimens of *A. rostratus* taken at Guaymas on the western coast of Mexico.

[1] Zoe, IV. 1893, 240.

[2] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 543.

[3] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 145, 146.

Ammodramus rostratus guttatus (Lawr.).

St. Lucas Sparrow.

Passerculus guttatus Lawrence, Ann. Lyc. Nat. Hist. N. Y., VIII. 1867, 473 (orig. descr.; type from San José). Cooper, Orn. Cal., 1870, 185 (descr.; crit.; figures head; San José). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, pl. 25, fig. 1. Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 23, 63, 74, no. 195; Proc. U. S. Nat. Mus., III. 1880, 2 (crit.); VI. 1883, 158, footnote ("doubtful"; crit.; S. Lower Calif.). Coues, Check List, 2d ed., 1882, 52, no. 231.

[*Zonotrichia*] *guttata* Gray, Hand-list, II. 1870, 95, no. 7,413.

[*Passerculus*] *guttatus* Coues, Key N. Amer. Birds, 1872, 136 (descr.; San José).

Passerculus rostratus, var. *guttatus* Coues, Check List, 1873, 33, no. 160 a. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 544, pl. 25, fig. 1 (crit.; Cape St. Lucas). Jasper, Birds N. Amer., 1878, 154, pl. 104, fig. 14 (San José).

P.[*asserculus*] *guttatus* Ridgway, Proc. U. S. Nat. Mus., V. 1883, 537–539 (crit.; San José del Cabo). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1886, 382 (crit.). Coues, Key N. Amer. Birds, 4th ed., 1894, 364 (descr.; Cape St. Lucas).

Ammodramus rostratus guttatus Ridgway, Proc. U. S. Nat. Mus., VIII. 1885, 355. A. O. U., Check List, 1886, 267, no. 544 a. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 299 (measurements of type; San José del Cabo; Santa Margarita Island).

Passerculus rostratus Sharpe, Cat. Birds Brit. Mus., XII. 1888, 680, 681, part (Cape St. Lucas).

A.[*mmodramus*] *rostratus guttatus* Ridgway, Man. N. Amer. Birds, 2d ed, 1896, 410 (descr.; vicinity of Cape St. Lucas).

Ammodramus halophilus McGregor, Auk, XV. 1898, 265–267 (orig. descr.; type from Abreojos Point; descr. nest and eggs).

Passerculus rostratus halophilus Ridgway, Birds N. and Midd. Amer., pt. I. 1901, 202 (descr.; Abreojos Point).

[*Passerculus*] *rostratus* Dubois, Synop. Avium, fasc. IX. 1901, 631, part.

Passerculus rostratus guttatus Ridgway, Birds N. and Midd. Amer., pt. I. 1901, 201, 202 (descr.; San José del Cabo).

Under the name *Ammodramus halophilus* Mr. R. C. McGregor has characterized a bird which he found breeding at Abreojos Point, Lower California, as "most closely related to *A. rostratus guttatus*, but 'uniformly larger and much darker; upper parts decidedly olivaceous instead of olive grayish.'" The included quotation was taken by Mr. McGregor from a letter written by Mr. Ridgway, who has since adopted the form as a subspecies in his Birds of North and Middle America, while it has been similarly recognized in the Tenth Supplement to the A. O. U. Check List.

It does not seem to me justifiable, however, to regard *halophilus* as distinct from *guttatus* until we have learned where the latter breeds, and especially

what it is like *when in nuptial plumage*. It is at present represented by only three or four specimens, all of which were taken in autumn or winter, while all the examples of *halophilus* that have been thus far examined are adults in breeding condition. On comparing nine specimens of the latter from Abreojos Point (in the National Museum Collection) with the type of *guttatus*, and with two closely similar birds taken at the same locality (San José del Cabo) by Mr. Frazar, I fail to verify the differences in respect to size which are claimed to exist between the two forms. Indeed, two of the examples of *halophilus* have the wing of almost exactly the same length as that of the type of *guttatus*, while several of the former agree perfectly with the latter in respect to the size and shape of the bill. The color differences are obvious enough, but they are not greater than, nor dissimilar to, those which distinguish autumnal young of many of our Sparrows from adults of the same species killed at the height of the breeding season. In short, while it is not wholly impossible that *halophilus* may eventually prove to be a distinct race, the present indications are that this name has been based merely on fully mature, breeding specimens of *guttatus*, and that the type of the latter, with the few known birds which resemble it closely, are merely exceptionally small, slender-billed young in their first winter plumage.

The type specimen was taken by Mr. Xantus in December, 1859, at San José del Cabo, where Mr. Frazar obtained two similar examples in 1887, — one on October 3, the other on November 9. So far as we know, the bird is a winter visitor only to the Cape Region, and it evidently does not occur there in anything like so large numbers as *A. rostratus* or even *A. r. sanctorum*. Mr. Bryant "secured a single male on Santa Margarita Island, January 21, 1888, which Mr. Ridgway says is most like the type specimen of any he has seen."

In April and June, 1897, Mr. R. C. McGregor found what, as I have already stated, I consider to be the St. Lucas Sparrow breeding at Abreojos Point, Lower California, "in a salt marsh about five miles long by half a mile wide . . . surrounded by ocean on one side and hot desert on the others," and intersected by tidal creeks "which empty into a salt lake or pond lagoon." During his first visit, on April 19, the birds were abundant, and most of them were still "in perfect spring plumage." One of the females was flushed from her nest, which was placed "sixteen inches from the ground, in a tall bunch of glasswort, the top of which was bent over and in to form a covering," beneath which the bird could enter "from one side only." This nest was "larger than that of [the] San Benito Island species, made of salt grass and lined with fine shreds of grass and a few feathers of Larus." The three eggs, which it contained, were bluish white, with blotches of raw umber and spots of lilac. They measured respectively: .79 × .58, .80 × .58, and .78 × 58.

On June 17, the occasion of Mr. McGregor's second visit to Abreojos Point, the St. Lucas Sparrows were apparently laying their second clutches, for although no nests were found, "eggs on which the shell was formed" were taken from the oviducts of several of the females.

Ammodramus rostratus sanctorum (Ridgw.).

San Benito Sparrow.

Passerculus sanctorum Ridgway, Proc. U. S. Nat. Mus., V. 1883, 538 (San Benito I.).
P [*asserculus*] *sanctorum* Ridgway, *Loc. cit.*, 538, 539 (crit.).
Ammodramus (*Passerculus*) *sanctorum* Coues, Auk, XIV. 1897, 92, 93 (crit.).
Ammodramus sanctorum McGregor, Osprey, II. 1897, 42 (descr. habits, nest and eggs from San Benito Islands); Auk, XV. 1898, 264, 265 (descr. female, juvenal plumage).

Among the Passerculi collected by Mr. Frazar in or near the Cape Region are six specimens which, although variously intermediate in size between *A. rostratus* and *A. r. guttatus*, are colored more nearly like the latter. On comparing them with eleven examples (including the type) of *A. r. sanctorum* from the San Benito Islands, which Mr. Ridgway has been kind enough to send me for examination, I find that five belong, without question, to that recently separated — or rather resuscitated — insular race. The sixth bird is smaller than any of the others, and, indeed, not larger than one or two of the largest representatives of *halophilus* from Point Abreojos, but in respect to coloring it appears to agree more closely with *sanctorum*, to which, not without hesitation, I have finally decided to refer it.

This subspecies, originally named by the late Dr. Coues upwards of twenty-five years ago, but not until some time afterwards formally recognized either by him or by other ornithologists, is represented, as I have just said, by several skins in Mr. Frazar's collection, obtained at Carmen Island on March 6, and at San José del Cabo between October 10 and November 9. Mr. Ridgway has also mentioned three specimens "resembling '*P. sanctorum*' in coloration" which were collected by Mr. Belding at La Paz in January and February. From this we may infer that the bird is of regular and not very uncommon occurrence, in or near the Cape Region, in autumn, winter, and early spring. It is believed to be confined to Lower California at all seasons, and its only known breeding grounds are on the San Benito Islands. These islands, three in number, are described by Mr. R. C. McGregor as "situated about twenty miles west of Cerros Island. The two largest have each an area of several square miles and are from 200 to 400 feet high. The islands are quite dry during the summer season. For nine months almost no rain falls, while the porous and rocky character of the soil precludes the existence of springs or the formation of marshes and pools. The flora is semi-desert in nature. Several species of cacti and some small insular plants make up the vegetation, there being nothing which attains the size of a shrub or tree. Both the large islands are very hilly and these have been cut up by the heavy winter rains. The gullies so formed are often difficult or impossible to cross. It will thus be seen that the home of *Ammodramus sanctorum* is essentially different from that of any of the salt marsh *Ammodrami*."

Mr. McGregor further states that on these islands "the San Benito Sparrow far outnumbers all other land birds taken together." He examined three different nests, all of which were placed on the ground under small bushes. One found on March 30 contained three eggs. It "was sunken level with the ground, which served to support the thin walls. The outside is of large grass straws while the lining is of finer grass and a few feathers. The three eggs measure respectively .83 × .58, .82 × .61, .81 × .60. They were slightly incubated [when taken on April 1]. They are well marked all over with flecks and blotches of umber brown on a ground color of faint bluish white. One egg has one or two blackish hair lines on the large end."

Ammodramus savannarum bimaculatus (Swains.).

Western Grasshopper Sparrow.

Coturniculus passerinus perpallidus Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region).

Ammodramus savannarum perpallidus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 300 (Cape Region).

The birds collected by Mr. Frazar have rather stout bills for *bimaculatus*, but they are typical of that form in respect to coloring and to the relative lengths of their wings and tails.

Mr. Belding gives this sparrow as "rare," but states that he saw it in several localities. Mr. Frazar took only four specimens, two at San José del Cabo on October 21 and 27, respectively, and two at Triunfo on December 5 and 15. No one else has reported the bird from the Cape Region, nor does it seem to have been detected elsewhere on the Peninsula. It has occurred at various places in California, and in the summer of 1875 was found by Mr. Henshaw breeding at Santa Barbara directly on the coast. Most of the birds which visit Mexico and Central America in winter are said to be *passerinus*, but Salvin and Godman mention[1] a Mexican specimen which is "as pale as another, marked by Mr. Ridgway himself as *C. perpallidus*."

Chondestes grammacus strigatus (Swains.).

Western Lark Sparrow.

Chondestes grammaca (not *Fringilla grammaca* Say) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 304 (Cape St. Lucas).

Chondestes grammica strigata Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region).

Chondestes grammacus strigatus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 300 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas).

[1] Biol. Centr.-Amer., Aves, I. 1886, 385.

The Western Lark Sparrow is a common winter resident of the Cape Region, arriving from the North early in October (Mr. Frazar's first specimen was taken on the 8th). It is apparently not restricted to any particular kind of country, for Mr. Frazar found it quite as numerous in the flat sea-coast region about San José del Cabo as among the hills at Pierce's Ranch and Triunfo. None were seen by him, however, on the Sierra de la Laguna.

To the northward of the Cape Region, the Western Lark Sparrow is "generally distributed over the peninsula in winter and spring," according to Mr. Bryant. It will be strange if it is not found breeding in the more northern districts, for it nests commonly in southern California, and thence northward to British Columbia. Its winter range includes most of Mexico and extends to Guatemala.

Zonotrichia leucophrys (Forst.).

White-crowned Sparrow.

Zonotrichia leucophrys Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 304 (crit.; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 567 (Cape St. Lucas in winter). Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (La Paz and s.). Ridgway, *Ibid.*, footnote, (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II., 1889, 300 (Cape Region).

This is another very common winter resident. Mr. Frazar found it most numerous at San José del Cabo, where his first autumnal specimen, an adult male, was obtained on October 11. About a week before this, a White-crowned Sparrow was heard singing, but it was not shot and may have been *gambelii*. Mr. Belding has taken *leucophrys* on Cerros Island in May, and Mr. Bryant "found it on Santa Margarita Island and various places on the peninsula."

The White-crowned Sparrow breeds in the Sierras of California, "in the subalpine meadows from Alpine County to the northern part of Butte County."[1] It migrates at least as far as southward as Alamos, western Mexico, whence I have typical specimens. In the interior it has been reported from Tamaulipas, Guanajuato, and the valley of Mexico.

Mr. Anthony states that "all of the white crowns [*i. e.*, *leucophrys*, *gambelii*, and *nuttalli*] are abundant about the base of San Pedro [Martir] during the winter months, and a few are to be seen in the pines during migrations. But few specimens were taken and the comparative abundance of the different species was not determined."[2]

[1] Belding, Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 148.

[2] Zoe, IV. 1893, 241.

Zonotrichia leucophrys gambelii (Nutt.).

Intermediate Sparrow.

Zonotrichia gambeli intermedia Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (San José del Cabo; San Nicholas).

Z.[onotrichia] intermedia Ridgway, *Loc. cit.*, 540, footnote (Cape St. Lucas).

Zonotrichia intermedia Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 300 (Cape St. Lucas).

The Intermediate Sparrow was obtained by Xantus at San José del Cabo on November 15, and at San Nicolas in October. Mr. Belding did not meet with it, and Mr. Frazar took only four specimens, one at Triunfo on April 18, and three at San José del Cabo, on October 13, and November 3 and 5, respectively. From this it appears that in the Cape Region *gambelii* is much less numerous than *leucophrys*, if not of positively rare occurrence. To the northward it was not seen by Mr. Bryant, but Mr. Anthony found it in the northwestern part of the Peninsula. Typical *nuttalli* has occurred on San Pedro Martir, about Ensenada, and on Santa Margarita Island, but not as yet in the Cape Region.

Z. l. gambelii is an abundant winter resident in most parts of California, but it is not known to breed south of Oregon, while its summer range extends into Alaska. Mr. Frazar collected numerous specimens near the city of Chihuahua, Mexico, in the autumn of 1888, but he found none south of Guaymas on the west coast. These facts suggest that *gambelii*, at all seasons, has a more northern distribution on the Pacific slope than its near ally *leucophrys*.

Spizella socialis arizonae Coues.

Western Chipping Sparrow.

Spizella socialis arizonae Belding, Proc. U. S. Nat. Mus., VI. 1883, 347 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 300 (Victoria Mts.).

Mr. Belding characterizes this sparrow as "rather rare," and says that he did not see it below 3000 feet altitude, both of which statements are confirmed by the experience of Mr. Frazar, who obtained only a single specimen, — a male, killed on April 30, on the summit of the Sierra de la Laguna. Mr. Bryant did not meet with the bird at all, but Mr. Anthony has found it "at lat. 31° N., from the coast to 2,500 feet altitude" (Bryant) and about the base of San Pedro Martir, where it is abundant and resident.[1] It is rather common in summer in most parts of California, and ranges northward to the Yukon

[1] Anthony, Zoe, IV. 1893, 241.

Valley, Alaska. In the Sierra Madre Mountains of Mexico it breeds as far south as Pinos Altos, whence I have typical specimens, taken in June. None of my collectors have found it on the west coast of Mexico.

Spizella pallida (Swains.).

Clay-colored Sparrow.

Spizella pallida Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (San José and elsewhere in Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 301 (Cape Region).

This is a common winter resident in the Cape Region, whence it was first reported by Mr. Belding. Mr. Frazar found it numerous at San José del Cabo (where his first specimen was shot on October 14) and at Triunfo (in December). He also took it at Santiago, but it is not included in his lists of birds seen at La Paz and on the Sierra de la Laguna. Mr. Bryant notes it as common on Santa Margarita Island and northward on the Peninsula, presumably in autumn, winter, or spring, for there is no reason to suppose that it breeds as far south as even the northern part of Lower California.

Dr. Cooper has recorded *S. pallida* as "common in April" at Fort Mojave,[1] but no one else seems to have found it in California. It breeds in the interior of North America and migrates as far southward as Oaxaca in southern Mexico.

Spizella breweri Cass.

Brewer's Sparrow.

Spizella breweri Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 301 (Cape Region).

Mr. Belding considers Brewer's Sparrow "abundant," but Mr. Frazar did not find it at all common, and his collection contains only five specimens as against thirty-nine of *pallida*. He saw it at La Paz, Triunfo, and San José del Cabo, as well as on Carmen Island. Mr. Bryant mentions only one example, which he shot "at San Julio (near Comondu)," and which he considers "intermediate between this species and *S. pallida*." *S. breweri* is, of course, only a winter visitor to the Cape Region. Mr. Frazar's latest spring date is April 20.

North of San Diego, in California, Brewer's Sparrow is seldom seen near the coast, but east of the Sierras it is of regular and frequent occurrence at its seasons of migration. Mr. Grinnell states that it is "tolerably common in summer from 5,000 to 7,000 feet on the brushy mountain sides between Pine

[1] Proc. Calif. Acad. Sci., II. 1863, 122.

Flats and Mt. Waterman," where full-grown young were obtained on July 3, 1897,[1] and Mr. Belding has found it " July 1 on Castle Peak, Nevada County, up to 8,000 feet," where it doubtless breeds.[2] In Mexico it occurs plentifully in winter and early spring near the city of Chihuahua, and it has been taken still further south, in Durango. I have specimens shot at Oposura, Sonora, but none from the west coast south of Guaymas.

Spizella atrogularis (Cab.).

Black-chinned Sparrow.

Spizella atrigularis Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, pl. 26, fig. 12; II. 1874, 15 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., VI. 1883, 348 (Victoria Mts.; Pescadero). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 301 (Cape Region).

The specimens taken in Lower California by Mr. Frazar appear to be peculiar only in respect to their bills, which are somewhat broader than in the birds which breed in southern California.

The Black-chinned Sparrow is apparently of rather uncommon occurrence in the Cape Region, where it was first detected by Mr. Belding, who, in the winter of 1882–83, saw a single bird in the mountains, and afterwards, near Pescadero, a small flock, from which a single specimen was obtained. Mr. Frazar took two at La Paz in February, and six at Triunfo in April, the latest on the 23d of the month. To the northward, according to Mr. Bryant, it was found by Mr. Belding in May, 1885, between San Rafael and San Pedro Martir, but nowhere numerously, and by Mr. Anthony on San Pedro Martir[3] and at Valladeres. At the place last named "they were common and nesting" (Bryant). It is not impossible that a few pairs breed in the Cape Region, also, but this remains to be proved.

This Sparrow has been found in summer at a number of localities in southern California, where, according to Mr. F. Stephens, it nests in chemisal brush on steep hillsides at between 1,000 and 3,000 feet altitude. It has occurred as far to the northward as Inyo county in the interior of the State and in Alameda county near the coast. It is said to have a wide range in Mexico, but a single bird shot by Mr. J. C. Cahoon at Oposura, Sonora on May 10, 1887, is the only specimen which my collectors have obtained in that country.

[1] Pub. II. Pasadena Acad. Sci., 1898, 37.

[2] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 157.

[3] Mr. Anthony has since reported that near San Pedro Martir the species is "rather common in the hills from the coast to the base of the mountain," and that he is "sure that its song was heard in May, 1887, at 10,000 feet elevation." Zoe, IV. 1893, 241.

Junco bairdi Ridgw.

Baird's Junco.

Junco bairdi (Belding MS.) Ridgway, Proc. U. S. Nat. Mus., VI. 1883, 155, 156 (orig. descr.; types from Laguna), 158, footnote (crit.; S. Lower Calif.), 348 (measurements of birds from Laguna and Victoria Mts.); Birds N. and Midd. Amer., pt. I. 1901, 294, 295 (descr.; Victoria Mts.; Mount Miraflores, etc.). Belding, Proc. U. S. Nat. Mus., VI. 1883, 346, 348 (Victoria Mts.). A. O. U., Check List, 1886, 276, no. 571. Sharpe, Cat. Birds Brit. Mus., XII. 1888, 653 (descr.; Lower Calif.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 301 (Victoria Mts.; La Laguna); Zoe, II. 1891, 198 (Victoria Mts.).

Junco hiemalis bairdi Coues, Key N. Amer. Birds, 4th ed., 1894, 875 (descr.; Lower Calif.).

J.[*unco*] *bairdi* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 425 (descr.; mts. of S. Lower Calif.).

[*Junco insularis*] var. *bairdi* Dubois, Synop. Avium, fasc. IX. 1901, 629 (Basse-Californie).

The female is uniformly smaller than the male, and her general coloring, particularly the ash of the head and the cinnamon buff of the sides, is duller and paler. The rufous brown of the back is also much lighter than in the male, being scarcely deeper than the color on the sides. The lores are dusky instead of blackish.

Winter plumage: — My series contains only three specimens in winter plumage. Of these, a male, taken on November 28, is considerably deeper and richer colored than are any of the spring birds, and the rufous brown of the neck is more strongly tinged with olive, while the crissum and under tail coverts are distinctly buffy. The cinnamon of the sides, however, is duller than in spring. The other two specimens are females. They differ from the male just described only in having the ash of the throat much lighter, the buff of the crissum and under tail coverts deeper, the brown of the back brighter and more rufous. They are very much richer colored than any of the spring females.

Individual variations: — The brown of the upper parts varies from faded cinnamon brown to deep cinnamon rufous — almost chestnut brown in some specimens; the color of the sides from dull pale cinnamon to light cinnamon rufous. There is a tendency to olivaceous tipping on the feathers of the occiput and nape as well as, sometimes, on those of the crown and forehead. A specimen taken on May 24 has a narrow but well-defined slaty black collar extending from the sides of the neck across the forward part of the back or the lower part of the nape. Two other birds, killed at about the same time, also show traces of this collar. In all three the slaty black is confined to the extreme tips of the feathers. Some of the duller males are distinguishable from the brightest females only by the clearer tone of the ash on the top and sides of the head.

This species was discovered by Mr. Belding in 1883, in the mountains south of La Paz where it "was very common . . . above 3,000 feet altitude." Mr. Frazar found it in considerable numbers on the Sierra de la Laguna in May and early June, but so few were observed here in December as to lead him to conclude that many individuals must descend to lower levels to pass the winter. They cannot, however, go very far down, for none were met with at San José del Rancho, and but one (on April 13) at Triunfo. On the Sierras they inhabit the pine and oak woods, and, like most Juncos, are tame and familiar. They often came into a shed where Mr. Frazar prepared his specimens, and hopped about his feet, under the table, or pecked at the dried venison suspended from the roof. No nests were found, but late in May a bird was seen collecting building material.

Baird's Junco appears to be confined to the extreme southern end of the Peninsula, never having been observed so far north, even, as La Paz. It is, therefore, one of the most characteristic birds of the Cape fauna.

Amphispiza bilineata deserticola Ridgw.

Desert Sparrow.

Amphispiza bilineata (not *Emberiza bilineata* Cassin) Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1886, 367, 368, part (descr. female from La Paz). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 302 (Cape Region).

Mr. Frazar found the Desert Sparrow at Triunfo, San José del Cabo, La Paz, and Carmen Island. It was commonest at La Paz, and least numerous at San José del Cabo. Neither his notes nor the dates at which his specimens were collected afford any evidence that it breeds in the Cape Region, but Mr. Bryant has found nests on Santa Margarita and Magdalena Islands where it was "the most common and generally distributed species." It appears to range over the entire Peninsula, but in California is practically confined to the region east of the Sierras. I have winter specimens taken at Guaymas, Cumpas, and Bacuachi in western Mexico and a large series collected near the city of Chihuahua in autumn. These Mexican specimens do not differ, so far as I can discover, from those which Mr. Frazar obtained in Lower California, although the Guaymas bird should represent Mr. Nelson's *A. b. pacifica*,[1] the type locality of which is Alamos, Sonora.

Aimophila ruficeps sororia Ridgw.

Laguna Sparrow.

Peucaea ruficeps Cooper, Orn. Cal., 1870, 218, part. Coues, Check List, 1873, 35, no. 171, part; 2d ed., 1882, 55, no. 255, part. Ridgway, Nom. N. Amer.

[1] Auk, XVII. 1900, 267.

Birds (Bull. U. S. Nat. Mus., no. 21) 1881, 25, no. 230, part. A. O. U., Check List, 1886, 278, no. 580, part.

Peucaea ruficeps boucardi (not *Zonotrichia boucardi* SCLATER) BELDING, Proc. U. S. Nat. Mus., VI. 1883, 348 (Victoria Mts.). BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 302 (Victoria Mts.; ? Llanos de San Julian).

P.[eucaea] ruficeps COUES, Key N. Amer. Birds, 4th ed., 1894, 374, 375, part.

P.[eucaea] ruficeps boucardi RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 429, part (Lower Calif.).

Aimophila ruficeps sororia RIDGWAY, Auk, XV. 1898, 226, 227 (orig. descr.; type from Victoria Mts.); Birds N. and Midd. Amer. pt. I. 1901, 248 (descr.; Laguna; Victoria Mts.). A. O. U. COMM., Auk, XVI. 1899, 120, no. 580 c.

[*Haemophila ruficeps*] var. *sororia* DUBOIS, Synop. Avium, fasc. IX. 1901, 635 (Basse-Californie S.).

It is probable that Mr. Bryant's record of the occurrence of *Peucaea ruficeps boucardi* at Llanos de San Julian (about latitude 29° N.) relates to the present form, but this cannot be considered assured until the specimen taken (on April 19, 1889) at the locality just named has been carefully re-examined. Mr. Anthony states that *Aimophila ruficeps* "seems to be rather common in a few favored localities along the base of San Pedro" Martir and that "a series of four skins taken between Tia Juana and the base of San Pedro are practically indistinguishable from Southern California examples."[1]

The specimens collected by Mr. Frazar at Triunfo sustain very satisfactorily the characters ascribed by Mr. Ridgway to *sororia*. In respect to color and markings, this form is about intermediate between *ruficeps* and *scottii*, but its bill is unlike that of either of these races. It seems to be a perfectly good subspecies.

It was discovered in the Cape Region by Mr. Belding, who found it "common on grassy hillsides above 2,500 feet altitude," and paired in February. Mr. Frazar met with it only at Triunfo, where it was not common in April, and still less numerous in June, the majority probably going further north to spend the summer. A few remained to breed, however, for a female taken on June 23 had evidently laid all her eggs, and was incubating.

The Laguna Sparrow is believed to be confined to the more southern portions of the Peninsula, but the northern limits of its range are not as yet definitely known.

Melospiza lincolnii (AUD.).

LINCOLN'S SPARROW.

Melospiza lincolni BELDING, Proc. U. S. Nat. Mus., VI. 1883, 348, part (Victoria Mts.), 350 (La Paz and s.). BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 303, part (Cape Region).

Mr. Belding found this species less common than the Laguna Sparrow in the mountains, and rare in the low country near the coast. Mr. Frazar met with

[1] Zoe, IV. 1893, 242.

it only at Santiago, where, on November 21, two specimens were shot and a third seen in tules on the border of the lagoon. To the northward, Mr. Bryant has noted it at Comondu and Jesus Maria, and Mr. Anthony has observed it "on the northwest coast during migration" (Bryant). It probably does not breed on the Peninsula, for in California, where it is rather common in spring and autumn, and not uncommon locally in winter, it has been found in summer only among the mountains from 4,000 feet altitude upwards. It migrates as far south as Guatemala, and is common in winter in western Mexico.

Melospiza lincolnii striata Brewst.

Forbush's Sparrow.

Melospiza lincolni (not *Fringilla lincolnii* Audubon) Belding, Proc. U. S. Nat. Mus., VI. 1883, 348, part (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 303, part (Cape Region).

Mr. Chapman has expressed some doubts [1] as to the validity of *striata*, to which he refers two autumn birds taken in British Columbia by Mr. Streator, and Mr. Ridgway, in his Birds of North and Middle America, cites the name, preceded by a question-mark, in his synonymy of *M. lincolnii*. I see no reason why the existence of intermediate specimens, such as those to which Mr. Chapman calls attention, should be necessarily prejudicial to the recognition of the form as a subspecies, although its standing cannot perhaps be regarded as assured until its breeding-grounds are definitely known, and fully mature birds in summer plumage have been examined.

A specimen in the United States National Museum, taken by Mr. Belding in the Victoria Mountains on February 20, 1883, seems to be referable to this subspecies, whose summer home probably lies to the northward of the United States on or near the Pacific coast, — perhaps in British Columbia, where the type specimens were obtained.

Pipilo maculatus magnirostris Brewst.

Mountain Towhee.

Pipilo maculatus megalonyx (not *Pipilo megalonyx* Baird) Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (Miraflores); VI. 1883, 348 (Victoria Mts.). A. O. U., Check List, 1886, 284, no. 588 a, part. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 303 (San José del Cabo).

Pipilo megalonyx Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1886, 409, part (Lower Calif.).

[1] Bull. Amer. Mus. Nat. Hist., III. 1891, 148.

Pipilo maculatus magnirostris Brewster, Auk, VIII. 1891, 146, 147 (orig. descr.; types from Sierra de la Laguna). Bryant, Zoe, II. 1891, 198 (Victoria Mts.). Ridgway, Birds N. and Midd. Amer., pt. I. 1901, 414, 415 (descr.; mt. districts of S. Lower Calif.).

[*Pipilo maculatus*] var. *magnirostris* Dubois, Synop. Avium, fasc. IX. 1901, 637 (Basse-Californie).

Concerning the characters by which *P. m. magnirostris* may be distinguished from its nearest allies, I have nothing to add to what appeared in my original description of the former.

This Towhee which, until recently, has been confounded with *P. m. megalonyx*, is probably confined to the Cape Region, where it is resident, and very common locally in the mountains south of La Paz. Mr. Frazar found it in the greatest numbers on the Sierra de la Laguna in May and early June. A few were also seen on the summit of this mountain in December, but most of those which pass the summer there evidently descend to lower levels at the approach of winter. They were rare at Triunfo in summer, but very numerous at all seasons about San José del Rancho, where a nest containing three eggs was taken on July 22. According to Mr. Bryant, no Towhees of the *P. maculatus* group have been detected in Lower California north of La Paz excepting "in the region of San Pedro Martir," where Mr. Anthony has found *P. m. megalonyx* breeding at from 2,500 to 11,000 feet altitude. I have not seen specimens from this region, but they are not likely to belong to the present subspecies.

The nest found at San José del Rancho was placed "on the ground under a bush close to roots." It measures externally 3.55 in diameter by 1.75 in depth; internally 2.15 in diameter by 1.50 in depth. It is composed of weed stalks and coarse grass, and is lined with fine grass and a little horsehair. The eggs are elliptical-ovate in shape, and measure respectively 1.02 × .71; 1.00 × .75; and 1.02 × .73. Their ground color is dull white, but this is nearly concealed by innumerable fine spots of lavender and pinkish brown, the latter color being most prevalent and conspicuous about the larger ends. These eggs are very closely matched by several eggs of *P. erythrophthalmus* in my collection.

Pipilo fuscus albigula (Baird).

St. Lucas Towhee.

Pipilo albigula Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 305 (orig. descr.; types from Cape St. Lucas). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, pl. 15 (descr.). Cooper, Orn. Cal., 1870, 248 (descr.; figures head; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, pl. 31, fig. 11. Sharpe, Cat. Birds Brit. Mus., XII. 1888, 755 (descr.; Cape St. Lucas; La Paz). Ridgway, Birds N. and Midd. Amer., pt. I. 1901, 433, 434 (descr.; Cape St. Lucas district).

[*Pipilo*] *albigula* Gray, Hand-list, II. 1870, 92, no. 7,362.

[*Pipilo fuscus*] var. *albigula* Coues, Key N. Amer. Birds, 1872, 152 (descr.; Cape St. Lucas). Dubois, Synop. Avium, fasc. IX. 1901, 637 (Basse-Californie).

Pipilo fuscus, var. *albigula* Coues, Check List, 1873, 43, no. 206 a. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 127, 128, pl. 31, fig. 11 (descr. bird and eggs from Cape St. Lucas; crit.). Jasper, Birds N. Amer., 1878, 156, pl. 104, fig. 32 (S. Lower Calif.).

Pipilo fuscus albigula Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus. no. 21), 1881, 26, 64, 74, no. 240 a; Proc. U. S. Nat. Mus., V. 1883, 540 (crit.); VI. 1883, 158, footnote (crit.; S. Lower Calif.). Coues, Check List, 2d ed., 1882, 61, no. 307. Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region); VI. 1883, 345 (Cape Region). A. O. U., Check List, 1886, 285, no. 591 a. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 304 (Cape St. Lucas). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (La Paz).

P.[*ipilo*] *fuscus albigula* Belding, Proc. U. S. Nat. Mus., VI. 1883, 344 (Lower Calif.). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 440 (descr.; Lower Calif.).

P.[*ipilo*] *f.*[*uscus*] *albigula* Coues, Key N. Amer. Birds, 4th ed., 1894, 397 (descr.; Lower Calif.).

Young in juvenal plumage: — Female (No. 15,973, San José del Cabo, October 31, 1887). Above, including the crown, uniform pale wood brown, the greater and middle wing coverts clayey buff; wings and tail light clove brown, the quills edged with ochraceous, the tail feathers tipped with the same, forming obscure terminal spots; middle of the breast and fore part of the abdomen brownish white; sides of the breast dull olive gray; remainder of the under parts rusty ochraceous, deepest on the under tail coverts, crissum, and flanks; buffy of throat bordered on each side by a dusky malar stripe which, above, is separated from a still more obscure rictal stripe by a narrow interval of buffy; sides of the head uniform with the back; lores, however, distinctly buffy; a few obscure, dusky spots on the breast.

In the specimen just described the feathers of the jugulum and breast seem to be largely those of the first winter plumage. There are also a few feathers of this plumage among the interscapulars, but otherwise the bird, although taken so late in the season, is unmistakably in juvenal plumage.

Another female (Triunfo, December 5, 1887), apparently a young bird in winter plumage, has the spots on the jugulum as well defined as in many of the spring specimens. The breast and a portion of the abdomen are also finely spotted with dark brown, a feature which I do not find in any other example in the entire series. This spotting is probably a characteristic of the juvenal plumage which, in this individual, has reappeared in the first winter plumage. It will be remembered in this connection that young in first plumage of the allied forms *P. f. mesoleucus* and *P. fuscus* are rather thickly and generally spotted over most of the under parts. The absence of these markings in No. 15,973 is due, no doubt, as above suggested, to the fact that the feathers of the breast had been already changed for those of the first winter plumage.

Most of the autumnal birds in the series before me have the greater and middle wing coverts tipped with ochraceous. In some of them the color of

the crown is but slightly more rufescent than that of the back. In others it is nearly as much so as in spring. As a rule, the coloring of the upper parts is clearer and more olivaceous in autumnal than in spring specimens.

Individual variations: — The most marked individual variation is in respect to the number and size of the black spots on the jugulum. These are sometimes numerous, large, and conspicuous, sometimes almost wholly wanting. As a rule, they form a fairly well-defined border about the buffy space which they enclose. Several birds have the throat as well as the jugulum spotted finely but thickly over its entire extent. As Mr. Ridgway has remarked, the buffy of the throat is not always palest posteriorly, being sometimes uniform throughout. Most of my specimens have the outer tail feathers narrowly tipped with rusty, but in a few these feathers are perfectly plain. The rufescent color of the crown is a constant character in spring birds.

The collection contains a partial albino (No. 16,977) taken at San José del Rancho on July 6.

This Towhee, which was discovered at Cape St. Lucas by Mr. Xantus, is confined to Lower California. In the Cape Region it was "not often seen at any locality" by Mr. Belding during his visit of 1881–82, and it receives no mention whatever in the paper relating to his explorations of the following year. Mr. Frazar, however, collected over *one hundred specimens*, and notes the bird as "common about La Paz up to the middle of March, after which it entirely disappeared; exceedingly abundant at Triunfo in April, but only common in June, and less numerous still in December; rare on the top of the Sierra de la Laguna in May and early June; and not common at San José del Rancho in December." At San José del Cabo a specimen taken on October 29 was the only one seen. These facts indicate that the birds move about a good deal at different seasons, and that many which winter in the Cape Region breed further to the northward.

Mr. Bryant says that he has found *albigula* "as far north as lat. 30°." Since this statement was published, however, Mr. Anthony has described *P. f. senicula* which, he states, is intermediate in coloring, as well as in distribution, between *crissalis* and *albigula*, and to which he apparently refers all the birds that he has seen from the upper parts of the Peninsula "as far south as 29° at least," adding "it is to be regretted that there are no specimens available from the country between San Fernando and Cape St. Lucas."[1] It should be noted in this connection that San Fernando is in about latitude 29° 30′ north,[2] and hence very near the point to which Mr. Bryant claims that the northern range of *albigula* extends. This evidence leaves us in doubt as to whether or not the forms *albigula* and *senicula* meet during the breeding season in the central portions of Lower California. We are also ignorant as to whether or not they intergrade. Mr. Ridgway treats *albigula* as a full species in his Birds of North and Middle America, but in view of the uncertainties just discussed, I prefer to include it here as a subspecies of *P. fuscus*.

[1] Auk, XII. 1895, 109–112.

[2] Anthony, *Loc. cit.*, 134.

At San José del Rancho Mr. Frazar collected three nests of this Towhee, on July 20, 24, and 29 respectively. They are composed of dry grass and weed-stalks, one having also a few twigs on the outside. One is lined with black horsehair, another with mixed white and black horsehair, the third with horsehair and fine grass. All three are considerably smaller than a nest of *P. f. crissalis* in my collection. Two were built in bushes and one in a tree, the height varying from six to eight feet. Each nest contained three eggs. Those of the set taken on July 24 were slightly incubated, all the others freshly laid. The ground color of these eggs is greenish white with a tinge of bluish, very like that of eggs of the Red-winged Blackbird. They are marked, chiefly about the larger ends, with irregular spots, dashes, and pen-lines of lavender and purplish black. They average .97 × .68, with extremes of .99 × .70, .98 × .64, and .96 × .69. Dr. Brewer mentions[1] a nest found by Mr. Xantus in a "wild *Humulus* thicket," and another "in a thicket of wild roses in the garden fence." One of these nests contained four eggs.

Oreospiza chlorura (Aud.).

Green-tailed Towhee.

Pipilo chlorurus Belding, Proc. U. S. Nat. Mus., V. 1883, 540 (Cape Region); VI. 1883, 348 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 304 (Cape Region).

The Green-tailed Towhee is a rather common winter resident in the Cape Region, frequenting alike the open, arid country near the coast and the wooded cañons and slopes of the mountains, but evidently preferring the latter. Mr. Frazar found it most numerously at San José del Rancho and Triunfo. It was rare at La Paz in January, February, and March, but not uncommon at San José del Cabo after October 4, the date of its first appearance in autumn. A single specimen (a female), taken on the Sierra de la Laguna on May 25, was probably a belated straggler, for the next previous date was April 21, when one was seen at Triunfo. Mr. Bryant "obtained specimens on Santa Margarita Island and at various places on the peninsula," to the northward.

This Towhee is apparently nowhere common along the coast of California, where it occurs chiefly during migration, and where, near the southern boundary, a few are said to winter, also. It breeds on the higher mountains of Los Angeles county, California, and northward along the eastern slope of the Sierras nearly or quite to the Columbia River. In winter it is found in western Mexico, as far south as Sinaloa.

[1] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 128.

Cardinalis cardinalis igneus (Baird).

St. Lucas Cardinal.

Cardinalis igneus Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 305 (orig. descr.; types from Cape St. Lucas). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, pl. 16 (descr.). Cooper, Orn. Cal., 1870, 238, 239, part (Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, pl. 30, fig. 10. Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1884, 341, part (crit.). Bartlett, Mon. Ploc. and Fring., pt. III. 1889, 14–16, part (descr.; crit.; La Paz; San José). Sharpe, Cat. Birds Brit. Mus., XII. 1888, 164–166, part (San José; Cape St. Lucas; subsp. of *Cardinalis cardinalis*).

Cardinalis virginianus Sclater, Cat. Amer. Birds, 1862, 100, part (Cape St. Lucas).

Cardinalis virginianus, var. *igneus* Ridgway, Amer. Journ. Sci., 3d ser., V. 1863, 39, part (remarks on color and geog. distr.; Cape St. Lucas). Coues, Check List, 1873, 41, no. 203 a, part. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 103, part, pl. 30, fig. 10 (nesting habits at Cape St. Lucas). Jasper, Birds N. Amer., 1878, 155, pl. 104, fig. 22, part (Cape St. Lucas).

[*Cardinalis*] *igneus* Gray, Hand-list, II. 1870, 102, no. 7,532, part.

[*Cardinalis virginianus*] var. *igneus* Coues, Key N. Amer. Birds, 1872, 151, part (descr.; Cape St. Lucas). Ridgway, Amer. Nat., VII. 1873, 618, part (Cape St. Lucas).

[*Cardinalis virginianus*] c. *igneus* Coues, Birds Northwest, 1874, 172, part (Cape St. Lucas).

Cardinalis virginianus igneus Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 26, 64, no. 242 a, part; Proc. U. S. Nat. Mus., V. 1883, 541 (crit.). Belding, *Ibid.* (Cape Region); VI. 1883, 345 (Cape Region).

Cardinalis virginiana ignea Coues, Check List, 2d ed., 1882, 60, no. 300, part.

Cardinalis cardinalis igneus Stejneger, Auk, I. 1884, 171. A. O. U., Check List, 1886, 286, no. 593 b. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 304 (Cape Region; Santa Margarita Island; Comondu); Zoe, II. 1891, 188 (San José del Cabo). Ridgway, Birds N. and Midd. Amer., pt. I. 1901, 647, 648 (descr.; Cape St. Lucas district).

Cardinalis ruber igneus Stejneger, Auk, I. 1884, 172, part.

C.[ardinalis] v. [irginianus] igneus Coues, Key N. Amer. Birds, 4th ed., 1894, 394, 395, part (Lower Calif.).

C.[ardinalis] cardinalis igneus Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 442 (Lower Calif.).

[*Cardinalis ruber*] var. *ignea* Dubois, Synop. Avium, fasc. IX. 1901, 619 (Basse-Californie).

Individual variations: — *Males.* The red is exceedingly variable in tint, ranging from the deepest geranium red through vermilion to a pale rose salmon. The back varies from ashy brown to faded grayish brown, with always a more or less strong tinge of red. The absence of the black frontal band appears to be quite constant. There is much variation in the size and shape of

the bill as well as in the length of the wings and tail, but the latter is nearly always shorter than in Arizona specimens of *superbus*. Many of my Sonora representatives of the latter are, however, positively indistinguishable from the larger examples of *igneus*.

Females. Several of my specimens have the entire top of the head as well as the cheeks, throat, and breast, strongly tinged with red; in others, these parts are perfectly plain, while the two styles are connected by a chain of variously intermediate birds. There is also much variation in respect to the amount of blackish on the chin, lores, etc. In a few examples this blackish is almost wholly wanting.

Winter plumage: — Adult males in autumn and early winter differ from spring males only in having the feathers of the back more broadly tipped with purer ashy; those of the crown with dull olive; those of the under parts with grayish white.

Young males in their first winter plumage have the back, nape, and sides of the neck uniform ashy, or brownish ashy, with, however, much concealed reddish; the top of the head and crest strongly washed with olivaceous; the under parts, except the throat and under tail coverts, much variegated with dull yellowish olive; the bill mottled with large patches of blackish. The tint of the red of the head and under parts varies quite as much in these young males as with spring adults, showing that it has no connection with age or season.

Young females in first winter plumage have the back, wing coverts, inner secondaries, and exposed outer surfaces of most of the remaining wing quills, as well as all the tail feathers, much ashier than in breeding birds; the top and sides of the head strongly ochraceous; the throat, lores, etc., darker grayish; the rest of the under parts deep brownish ochraceous; the bill with the base and tip of the maxilla brownish, but with no pronounced blackish as in the young male. The color of the under parts fades very gradually as the season advances, some of my February specimens being only slightly paler than the October and November ones.

The St. Lucas Cardinal is quite as abundant and almost as widely dispersed, near the southern extremity of Lower California, as the preceding species, but being of more sedentary disposition its numbers in any given locality vary only slightly, if at all, with the different seasons. It occurs practically everywhere from the shores of the Gulf to among the foot-hills of the mountains, but apparently not on the summits or upper slopes of the latter. Mr. Frazar found it most numerously at La Paz and Triunfo, least so at San José del Cabo, while he did not meet with a single specimen on the Sierra de la Laguna. Mr. Bryant saw the bird occasionally "among thick high shrubs and trees," on Santa Margarita Island, and it was common at Comondu, while further northward he traced it nearly to latitude 29°. Like the St. Lucas Towhee it is probably confined to the Peninsula. It is represented in southern Arizona and northern Sonora respectively by the closely allied *C. c. superbus*, and in southern Sonora and Sinaloa by *C. c. affinis* and *C. c. sinaloensis*. No form of this genus is in-

digenous to California, but *C. cardinalis* has been introduced there, and is said to have become established in the neighborhood of Galt and Stanhope.

Mr. Frazar took four nests of *C. c. igneus* at San José del Rancho in July, the first on the 14th, the last on the 20th of the month. Three were in bushes, the fourth in a small tree, the height above the ground varying from four to ten feet. They all closely resemble nests of the eastern Cardinal. The eggs, three in number in each instance, were all fresh or but slightly incubated. They average .96 by .72 with extremes of 1.01 by .73 and .93 by .70. The color and markings vary considerably with the different specimens, all of which are closely matched by eggs of *C. cardinalis* in my collection. In fact, I cannot detect even an average difference between the eggs of the two forms, although Dr. Brewer, writing of those of *igneus* taken by Mr. Xantus, says, "Their markings are larger, and more of a rusty than an ashy brown, and the purple spots are fewer and less marked than in *C. virginianus* [*C. cardinalis*]." [1]

Pyrrhuloxia sinuata peninsulae Ridgw.

St. Lucas Pyrrhuloxia.

Pyrrhuloxia sinuata (not *Cardinalis sinuatus* Bonaparte) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 304 (Cape St. Lucas). Cooper, Orn. Cal., 1870, 236, 237, part (Cape St. Lucas). Coues, Check List, 1873, 41, no. 202, part; 2d ed., 1882, 60, no. 298, part. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 96, part (breeding at Cape St. Lucas; crit.). Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 27, no. 243, part; Proc. U. S. Nat. Mus., V. 1883, 541 (crit.) Belding, *Ibid.* (Cape Region); VI. 1883, 345 (Cape Region). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1884, 343, part (Lower Calif.). A. O. U., Check List, 1886, 286, no. 594, part. Sharpe, Cat. Birds Brit. Mus., XII. 1888, 158–160, part.

[*Pyrrhuloxia*] *sinuata* Coues, Key N. Amer. Birds, 1872, 150, 151, part (Cape St. Lucas).

Pyrrhuloxia sinuata peninsulae Ridgway, Auk, IV. 1887, 347 (orig. descr.; type from San José); Man. N. Amer. Birds, 2d ed., 1896, 606 (descr.; S. Lower Calif.); Birds N. and Midd. Amer., pt. I. 1901, 627, 628 (descr.; Cape St. Lucas district). A. O. U. Comm., Suppl. to Check List, 1889, 14; Check List, abridged ed., 1889, and 2d. ed., 1895, no. 594 b. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 304 (Cape St. Lucas; Cape Region). Coues, Key N. Amer. Birds, 4th ed., 1894, 900.

[*Pyrrhuloxia sinuata*] var. *peninsula* Dubois, Synop. Avium, fasc. IX. 1901, 619 (Basse-Californie).

The characters by which Mr. Ridgway has proposed to distinguish the Pyrrhuloxia of Lower California prove reasonably constant in my series. The form *peninsulae*, however, does not differ nearly so much from *sinuata* as the latter does from *texana*.

[1] Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, II. 1874, 103.

Individual variations: — *Spring males.* Red of the crest sometimes pure dark wine color, sometimes strongly tinged with blackish. Red of the under parts sometimes pure and continuous from the chin to the crissum, sometimes interrupted by ashy on the breast and lower abdomen. Red of the capistrum usually pure, but occasionally tinged very slightly with blackish.

Spring females. Capistrum, throat, breast, abdomen, crissum, and under tail coverts sometimes plain, sometimes tinged with red.

Winter plumage: — *Adult males.* Crown, back, sides of neck, and entire under parts, except the throat, strongly tinged with yellowish brown or brownish olive, which, over the red of the median lower parts, forms merely a narrow tipping at the ends of the feathers.

Young males. Differing from adults in autumn only in having the red more restricted and often almost wholly concealed, on the forehead, as well as over most of the breast and lower abdomen, by the brownish tipping above mentioned.

Females. Wings and tail grayer than in spring birds, the general coloring clearer and richer, the upper parts brownish ashy, the lower parts rich buff tinged with brownish ashy on the breast and sides of neck and body; the upper tail coverts, inner secondaries, and greater and middle wing coverts, tipped with light brownish of the same shade as the back, this brownish, on the wing coverts, forming two ill-defined bands. If my series of autumnal females contains both young and adults I am unable to distinguish them.

This bird appears to be strictly confined to the Cape Region, where it is nowhere very common. Mr. Belding considered it more numerous in the interior than near the coast, but Mr. Frazar found it in the greatest numbers at Triunfo and San José del Cabo, the latter place being, of course, directly on the coast. About La Paz, however, only a single specimen was seen, and but one was obtained on the Sierra de la Laguna. At Santiago four were taken, and there is a skin in the collection from San José del Rancho. The bird is doubtless resident wherever found.

No representative of this genus is known to inhabit any part of California, but the closely related *P. sinuata* occurs in southern Arizona and western Mexico.

Zamelodia melanocephala (Swains.).

Black-headed Grosbeak.

Guiraca melanocephala Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 304 (Cape St. Lucas).

Goniaphea melanocephala Coues and Streets, Bull. U. S. Nat. Mus., no. 7, 1877, 11 (Pichilinque Bay).

Zamelodia melanocephala Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region).

Habia melanocephala Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 304 (Cape Region).

All my males of this species from the Cape Region have tawny postocular stripes and more or less well-defined, median crown or occipital stripes or spots of the same color. It has been asserted that these markings are peculiar to the bird of Lower California and the Pacific slope of the United States and British America (for which the name *capitalis* was proposed by Baird), but, as Mr. Ridgway has recently indicated,[1] they are not always present in specimens from the regions just mentioned, nor invariably absent in those from the interior of North America and Mexico. Striking, and to my mind conclusive, proof of their fallibility as distinguishing characters is afforded by two breeding males taken at Pinos Altos, Chihuahua, Mexico, on June 5 and 8, respectively. One of these has the black of the head perfectly uniform save behind the eyes, where there are a few inconspicuous spots of tawny; in the other there is a well-marked light postocular stripe, and a broad conspicuous median patch of tawny reaching from about the center of the crown to the vertex. In other words, the former specimen is nearly typical of *melanocephala*, the latter about an average example of *capitalis*.

Mr. Frazar notes the Black-headed Grosbeak as "resident during the entire year" in the Cape Region, but his collection contains no specimen taken later in spring than May 4, nor earlier in summer than July 22. He found the species at La Paz, where it was rare in February, more numerous in March; about Santiago, where it was common in late August; at San José del Rancho, where it was frequently seen in December; and on the Sierra de la Laguna, where a single specimen was taken on May 4th.

Mr. Bryant says that "it is not common in the northwest, according to Messrs. Belding and Anthony. The former found it breeding at Valle Trinidad, and saw a single specimen on Cerros Island, and the latter at San Rafael. I obtained a single pair at Comondu April 22, 1888."

This Grosbeak breeds in the Sierra Madre Mountains as far south as Chihuahua, and I have spring specimens from Alamos, in western Mexico. It is a common summer resident of most parts of California and ranges northward into British Columbia.

Guiraca caerulea lazula (Lesson).

Western Blue Grosbeak.

Guiraca caerulea (not *Luzula caerulea* Linnaeus) Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo).

Guiraca caerulea eurhyncha Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 305 (San José del Cabo).

Mr. Frazar's specimens, all but one of which are either females or young males in the brown plumage, agree closely with birds in my collection from western Mexico and various localities near the southern border of the western United States.

[1] Birds N. and Midd. Amer., pt. I. 1901, 619, footnote.

Mr. Belding, who was the first to detect this Grosbeak in Lower California, saw only two individuals, — both at San José del Cabo, in the spring of 1882. In the neighborhood of this town Mr. Frazar found the birds not uncommon in the autumn of 1887, taking no less than twelve at various dates between August 28 and November 4. A single specimen was also shot at San José del Rancho on December 20.

Mr. Bryant met with the Western Blue Grosbeak at Comondu, where "those which were taken had been feeding in a patch of growing wheat," and Mr. Anthony found it "very common in all the coast valleys from San Quintin northward." [1] It should breed on the Peninsula, but we do not know that it ever does so. It is a rather common summer resident in California, especially in the southern counties near the coast. In western Mexico my collectors have found it nesting as far south as Oposura, and have obtained specimens in winter and early spring about Alamos. Its winter range is said to extend through Central America to southern Costa Rica.

Cyanospiza amoena (Say).

Lazuli Bunting.

Passerina amoena Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 305 (Cape Region).

Mr. Belding and Mr. Frazar are quite in accord respecting this species, both characterizing it as somewhat uncommon in the Cape Region. If, as seems most probable from the evidence at hand, it does not breed there, it arrives from the north rather early, for Mr. Frazar took a specimen at Triunfo on August 15. He saw the greatest number, however, at San José del Cabo in September and October. None were observed by him either at La Paz or on the Sierra de la Laguna, but two were taken at Triunfo on December 9, and a third at San José del Rancho on December 23. The last two dates indicate that at least a few birds spend the winter in this region.

Mr. Bryant found the Lazuli Bunting "rare at Comondu and northward." Mr. Anthony states that it was abundant about San Pedro Martir, where "one or two were seen on top of the mountain." [2] It breeds from southern California to British Columbia, and in winter goes as far south as Mazatlan, in western Mexico.

Cyanospiza versicolor pulchra (Ridgw.).

Beautiful Bunting.

Cyanospiza versicolor (not *Spiza versicolor* Bonaparte) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 304 (crit.; Cape St. Lucas). Cooper, Orn. Cal., 1870, 234, 235, part (Cape St. Lucas). Baird, Brewer, and Ridg-

[1] Zoe, IV. 1893, 243. [2] *Ibid.*

WAY, Hist. N. Amer. Birds, II. 1874, 87, part, pl. 29, fig. 10 (breeding at Cape St. Lucas; crit.). SALVIN and GODMAN, Biol. Centr.-Amer., Aves, I. 1886, 361, 362, part (breeding at Cape St. Lucas, May 5).

Passerina versicolor (not *Spiza versicolor* BONAPARTE) BELDING, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo).

P.[asserina] versicolor pulchra RIDGWAY, Man. N. Amer. Birds, 1887, 448 (orig. descr.; type from Miraflores).

Passerina versicolor pulchra BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 305 (Cape St. Lucas; Miraflores).

Although this form has been lately given up by its original describer, Mr. Ridgway,[1] I consider it a perfectly good subspecies. Not only do the males in the large series before me exhibit, with remarkable constancy, the characters which serve to distinguish them from the males of *versicolor*, but the females, also, differ considerably in color, as well as in proportions, from those of the race just named, the female of *pulchra* being decidedly the grayer of the two, especially on the under parts and on the sides of the head and neck. Mr. Ridgway admits that "were it not for the intermediate character of specimens from western Mexico it would be comparatively easy to characterize a subspecies, *C. versicolor pulchra*, for the Lower California bird." I fail to see, however, why the fact that *an intermediate region* furnishes more or less intermediate specimens should affect the status of the forms in question to a greater degree than that of showing that they are not specifically distinct.

Winter plumage: — *Adult male* (No. 16,355, San José del Cabo, October 8, 1887). With the blue of the rump less purplish than in spring; the purple of the under parts deeper and duller; the inner secondaries, wing coverts and feathers of the crown, nape, back, rump, and entire under parts (excepting the chin) more or less broadly tipped with brownish olive, this tipping heaviest on the back, where it almost wholly conceals the purplish beneath. Another specimen (No. 16,264, Triunfo, December 6, 1887) has the brown confined to the occiput, nape, back, wings, sides of the neck, jugulum, and sides of the body; the rump, forehead, crown, sides of the head, and middle part of the abdomen being nearly as purely colored as in spring.

Young female (No. 16,359, Santiago, November 18, 1887). Above bister, the wings and tail ashy brown, the inner secondaries and greater and middle wing coverts edged and tipped with clayey brown; beneath brownish clay color, deepest on the sides of the neck and body and across the breast, palest on the abdomen, anal region, and crissum.

In the plumage just described the female of this species is exceedingly difficult to separate from autumnal females of *C. amoena*. The latter, however, usually have the wings more bluish and the general coloring brighter and more ochraceous. Moreover, the difference in size, and especially in the size and shape of the bill, can usually be relied upon to distinguish the two forms.

The collection contains no specimen of the young male in winter plumage, but it furnishes a dozen or more spring males in immature plumage. These

[1] Birds N. and Midd. Amer., pt. I. 1901, 592.

birds vary exceedingly in coloring, no two of them being precisely alike. Some of the duller specimens resemble the adult female, from which, however, they can be easily distinguished by the reddish tinge of their crowns and cheeks. Others again are mottled with dull purple on the throat and sides of the head, with lavender blue on the crown. In still others the entire plumage of the body is variegated with various shades of blue, purple, and brown, presenting a curiously piebald appearance.

In Lower California, this bird, as far as known, is strictly confined to the Cape Region. Indeed, it does not appear to range even so far northward as La Paz. Mr. Belding mentions it only in his list of "species found at San José del Cabo from April 1 to May 17," and characterizes it as "rare." Mr. Frazar met with it first at Triunfo, where three were taken on April 13, and where it soon became so abundant that "over one hundred were seen on April 21." Through June and July it was less numerous, but yet very common here as well as at Pierce's Ranch. At San José del Cabo a specimen was shot late in August and two others early in October, while in December four were taken at Triunfo and two at San José del Rancho; the last on the 23d. These dates indicate that at least some of the birds are resident, but Mr. Frazar thinks that by far the greater number leave Lower California in autumn and pass the winter elsewhere, probably in western Mexico. From the latter region I have a large series of specimens, including several taken in winter (February) at Alamos, and in May and June near Oposura.

"Though found close up to the Texan frontier of the United States, the only claim *C. versicolor* had for a long time to be included in the birds of North America was its occurrence in the peninsula of Lower California, where it breeds, Mr. Xantus having found a nest and three eggs on May 5th at Cape San Lucas." [1]

Spiza americana (Gmel.).

Dickcissel.

This species, new to Lower California, is represented in Mr. Frazar's collection by a single female, taken at San José del Cabo on September 27, 1887. No others were seen, and the bird just mentioned was doubtless a mere waif which had lost its way and wandered from the usual path of migration, for *S. americana* is practically unknown west of the Rocky Mountains [2] in the United States, and none of my collectors have obtained it in western Mexico. Colonel Grayson, however, records two specimens taken near Mazatlan "in the

[1] Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1886, 361, 362.

[2] One of the most western records is that by Mr. Scott (Auk, IV. 1887, 205) of a female taken by Mr. Herbert Brown, near Tucson, Arizona, on September 11, 1884.

month of August,"[1] and a few were observed in Guatemala, near the Pacific coast, by Salvin and Godman.[2] Further to the southward, in Central America, the bird is generally distributed and very plentiful in winter.

Calamospiza melanocorys Stejn.

Lark Bunting.

Calamospiza bicolor Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 304 (Cape St. Lucas). Coues and Streets, Bull. U. S. Nat. Mus., no. 7, 1877, 11 (Pichilinque Bay). Belding, Proc. U. S. Nat. Mus., V. 1883, 541 (Cape Region).
Calamospiza melanocorys Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 305 (Cape Region).

Lark Buntings are abundant throughout most of Lower California during the autumn and spring migrations. In the Cape Region, however, Mr. Frazar found them only at San José del Cabo, where the first was seen on September 27. During October they were exceedingly numerous, and were usually found in large flocks. None were observed after November 8, but as Mr. Bryant noted a flock on Santa Margarita Island as early as March 1, and as I have several specimens taken in January at Guaymas on the eastern shore of the Gulf of California (about latitude 28° north), it is not improbable that some remain in the Cape Region through the entire winter.

This species occurs in California only during migration, and then chiefly in the southern counties and in no very great numbers. It breeds principally east of the Rocky Mountains. It has not been recorded from western Mexico south of Guaymas, but in the interior of that country has been found as far south as Guanajuato.

Piranga ludoviciana (Wils.).

Louisiana Tanager.

Pyranga ludoviciana Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 347 (Victoria Mts.; La Paz).
Piranga ludoviciana Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 305 (Cape St. Lucas; Victoria Mts.; La Paz).

Mr. Xantus found the Louisiana Tanager at Cape St. Lucas between September 27 and November 17. Mr. Belding gives it as rare at La Paz and also among the "Victoria Mountains" (Bryant), presumably in late winter and early spring, although no dates are mentioned. Mr. Frazar notes it as not very uncommon at Miraflores in November, and at San José del Rancho in December. At the latter place, on July 29, he killed a female which "was

[1] Lawrence, Mem. Bost. Soc. Nat. Hist., II. 1874, 277.
[2] Biol. Centr.-Amer., Aves, I. 1886, 417.

evidently nesting." The bird may be briefly characterized, therefore, as a somewhat uncommon winter, and rare summer resident. To the northward, according to Mr. Bryant, it has been met with at only a few places, and nowhere numerously. Mr. Anthony states that he found it "quite common" at San Pedro Martir in late April and early May, 1893, but that it was "not seen above 7,000 feet." [1]

In California, the Louisiana Tanager occurs only in summer and at its seasons of migration. It is rather rare near the coast, but has been found breeding at Santa Barbara. In the interior it breeds commonly among the Sierras. Northward its range extends into British Columbia. It goes as far south as Guatemala, and is common in western Mexico in spring and autumn.

Progne subis hesperia Brewst.

Western Martin.

Progne purpurea (not *Hirundo purpurea* Catesby) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 303 (Cape St. Lucas).

Progne subis (not *Hirundo subis* Linnaeus) Baird, Rev. Amer. Birds, pt. I. 1865, 274–277, part (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 547 (San José).

Progne subis hesperia Brewster, Auk, VI. 1889, 92, 93 (orig. descr.; types from Sierra de la Laguna). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306 (Cape St. Lucas; San José del Cabo; Sierra de la Laguna); Zoe, II. 1891, 195 (San José del Cabo).

This subspecies, in which the differential characters are exhibited by the female only, was first met with by Mr. Frazar on the summit of the Sierra de la Laguna, where it appeared on April 29. Regularly each afternoon, during May and the first week of June, a few congregated over an open space in front of a hunter's cabin. They usually flew at a considerable height, but the males every now and then pitched downward nearly to the earth, descending with great velocity and making a booming noise very like that of the eastern Nighthawk. This remarkable habit, unknown in the common Martin, was constantly practised here, but, curiously enough, it was not once observed at Triunfo, where Mr. Frazar found the Western Martins abundant during the last three weeks of June. Belonging to the mine at this latter place, was an immense wood-pile covering over three acres and harboring great numbers of long-horned beetles upon which the Martins and Texan Nighthawks fed greedily. The Martins appeared every afternoon, a little before sunset, to the number of two or three hundred, and skimmed back and forth over the wood-pile until twilight fell. Mr. Frazar was told that they were first seen here about the date when they arrived on La Laguna. They disappeared suddenly and totally, immediately after a succession of heavy showers early in July, and were not afterwards met

[1] Zoe, IV. 1893, 243.

with excepting at San José del Cabo, where a few, evidently migrating, were seen passing southward in late August and early September.

Mr. Bryant records the Western Martin from several places in the northern portions of Lower California, and says that it has been found nesting by Mr. Belding in dead pines at Hansen's. Mr. Anthony states that in the neighborhood of San Fernando, it is "not uncommon at the mission and an occasional pair was seen in other localities, nesting in Woodpecker holes in the giant cactus,"[1] while on San Pedro Martir it is "very common; nesting in colonies from Valladares, 2,500 feet altitude, throughout the pines."[2] Mr. Frazar's experience indicates, of course, that the bird also breeds in the Cape Region, but he obtained no direct proof of this.

The Western Martin occurs in summer throughout most of California, and probably still further northward. Its winter haunts are not definitely known.

Petrochelidon lunifrons (Say).

Cliff Swallow.

Petrochelidon lunifrons Belding, Proc. U. S. Nat. Mus., V. 1883, 547 (San José del Cabo). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306 (San José del Cabo).

Two Cliff Swallows taken by Mr. Frazar, both young birds with white-spotted throats, are very much paler than any of my eastern examples in corresponding plumage. In both, the rump is dull ochraceous buff, the forehead, nuchal collar, breast, and sides, pale drab gray with a slight tinge of rufous. The only decided rufous is on the throat and sides of the head. These specimens are almost perfectly matched by a bird (No. 30,556) in the United States National Museum, labeled as taken "at sea off the west coast of Central America, Oct. 20, 1863." It is not improbable that all three belong to a form as yet undescribed, or possibly they may be the young of some of the known Mexican and Central American species of which I have seen only the adults.

Mr. Belding mentions seeing the Cliff Swallow on April 29, 1882, at San José del Cabo, where Mr. Frazar found it very numerous between September 8 and October 7, 1887. It occurred in large, straggling flocks which usually contained varying percentages of other species of Swallows, most of which were either migrating or collecting at this point preparatory to setting out across the sea. Neither of the observers just mentioned met with the Cliff Swallow at any other locality in the Cape Region. To the northward, however, it has been found at San Quintin Bay in May by Mr. Belding (fide Bryant) and at San Fernando[3] and San Pedro Martir by Mr. Anthony. At the locality last named it was "common in colonies from the coast to the top of the mountain;

[1] Auk, XII 1895, 141.
[2] Zoe, IV. 1893, 213.
[3] Auk, XII. 1895, 141.

. . . nesting on the sides of huge granite boulders in meadows of La Grulla May 13, and later on the eastern side."[1] It breeds abundantly throughout most of California and thence northward into Alaska, and goes as far south as Paraguay and Brazil in winter.

Hirundo erythrogaster Bodd.

Barn Swallow.

Mr. Frazar killed two Barn Swallows at Triunfo on April 24, but met with no others until August 28, when, on reaching the sea-coast, he found the bird at San José del Cabo. During September it was seen almost daily, usually in company with Cliff Swallows. Both species fluctuated considerably in numbers from time to time, for successive migrating flights were continually arriving and passing on, but the Barn Swallows, on the whole, kept increasing up to September 27, when they were really abundant. An interval of comparative scarcity followed, but they again became very numerous on October 10, the latest date under which the species is mentioned in Mr. Frazar's notes.

Although the Barn Swallow is here reported for the first time from the Cape Region, it has been seen further to the northward on the Peninsula: — at San Quintin, in May, 1881, by Mr. Belding; at San Jorge, in March, 1888, by Mr. Bryant; on San Pedro Martir and along the neighboring coast in April and May, 1893, by Mr. Anthony. It is very generally distributed, and rather common in summer, in California, and breeds as far northward as Alaska. Its winter range extends into South America.

Tachycineta bicolor (Vieill.).

Tree Swallow.

Tachycineta bicolor Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306 (Cape Region).

This Swallow was "often seen in winter" in the Cape Region by Mr. Belding, in 1881–82, but no one else appears to have met with it in any part of Lower California. Mr. Frazar, who looked for it very carefully, but vainly, is strongly of the opinion that the record just quoted requires confirmation. There is no apparent reason, however, why the bird should not visit Lower California, for it is not uncommon in California proper, and is known to migrate as far southward as Guatemala.

[1] Zoe, IV. 1893, 243.

Tachycineta thalassina lepida (Mearns).

Northern Violet-green Swallow.

(?) *Hirundo thalassina* Baird, Proc. Acad. Nat. Sci. Phila, 1859, 301, 303, part (Cape St. Lucas); Rev. Amer. Birds, pt. I. 1865, 299 part (crit.; Cape St. Lucas; San José).

(?) *Tachycineta thalassina* Belding, Proc. U. S. Nat. Mus., V. 1883, 537, part (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306, part (Cape Region).

Dr. Mearns has recently separated the Violet-green Swallow which breeds throughout the western United States from that inhabiting the southern tablelands of Mexico, restricting the name *thalassina* to the latter and bestowing on the former the name *lepida*.[1] He considers the two birds specifically distinct, but his text indicates that some of the specimens which he examined from northern Mexico were really intergrades, and I have others from the same region which unquestionably must be so regarded.

Mr. Frazar took a typical female of *lepida* at La Paz on February 14. This, so far as I know, is the only specimen which has been thus far obtained in the Cape Region, but there can be little doubt that *lepida* occurs there more or less regularly and numerously in winter or during migration. Mr. Nelson writes me that it is the characteristic form of northern Lower California, from which we may infer that it was the bird found by Mr. Anthony about San Pedro Martir "nesting in hollow pines," and "very abundant from Valladares to the top of the mountain."[2]

Tachycineta thalassina brachyptera, subsp. nov.

St. Lucas Swallow.

Hirundo thalassina Baird, Cat. N. Amer. Birds, 1859, no. 228, part; Proc. Acad. Nat. Sci. Phila., 1859, 301, 303, part at least (Cape St. Lucas); Rev. Amer. Birds, pt. I. 1865, 299, part at least (crit.; Cape St. Lucas; San José). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 347–349, part.

[*Tachycineta*] *thalassina* Coues, Key N. Amer. Birds, 1872, 113, part.

Tachycineta thalassina Coues, Check List, 1873, 23, no. 113, part; 2d ed., 1882, 42, no. 161, part. Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 20, no. 156, part. Belding, Proc. U. S. Nat. Mus., V. 1883, 537,

[1] Proc. Biol. Soc. Wash., XV. 1902, 31, 32.

[2] Zoe, IV. 1893, 243

part at least (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306, part at least (Cape Region).

Tachycineta thalassinus Sharpe, Cat. Birds Brit. Mus., X. 1885, 119–121, part.

T.[*achycineta*] *thalassina* Coues, Key N. Amer. Birds, 4th ed., 1894, 323, part. Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 462, part.

Subspecific characters: — Similar to *T. lepida* Mearns, but with the wing decidedly and apparently constantly shorter.

Type ♂ ad. No. 15,406. Collection of William Brewster, Sierra de la Laguna, Lower California, June 6, 1887, M. Abbott Frazar.

Measurements: —

Mus. No.	Sex	Locality	Date	Wing	Tail
15,401 [1]	♂	Sierra de la Laguna, Lower Cal.	June 4, 1887	4 35	1.88
15,400 [1]	♂	" " " " " "	" " "	4.24	1.89
15,397 [1]	♂	" " " " " "	May 11, "	4.20	2.00
15,405 [1]	♂	" " " " " "	June 6, "	4.20	1.82
15,399 [1]	♂	" " " " " "	" 2, "	4.19	1.91
15,398 [1]	♂	" " " " " "	May 11, "	4.18	2.09
15,402 [1]	♂	" " " " " "	June 4, "	4.16	1.76
15,396 [1]	♂	" " " " " "	April 29, "	4.15	1 93
15,403 [1]	♂	" " " " " "	June 4, "	4.13	1.91
15,404 [1]	♂	" " " " " "	" 6, "	4.09	1.76
15,406 [1]	♂	" " " " " "	" " "	4.07	1.73
15,412 [1]	♂	Triunfo, " "	April 15, "	4 21	1.85
15,414 [1]	♂	" " "	June 24, "	4.18	1.75
15,411 [1]	♂	" " "	April 15, "	4 10	1.87
15,413 [1]	♂	" " "	" " "	4.08	1.84
15,417 [1]	♂	La Paz, " "	Feb. 4, "	4.13	1.79
15,420 [1]	♂	" " " "	March 28, "	4.12	1.87
15,419 [1]	♂	" " " "	Feb. 14, "	4.09	1.80
15,418 [1]	♂	" " " "	" " "	3.98	1.78
		Average,		4.15	1.85+
15,407 [1]	♀	Sierra de la Laguna, Lower Cal.	June 2, 1887	4.11	1.76
15,408 [1]	♀	" " " " " "	" 4, "	4.05	1.69
15,409 [1]	♀	" " " " " "	" " "	3.95	1.67
15,410 [1]	♀	" " " " " "	" 6, "	3.94	1.65
15,415 [1]	♀	Triunfo, " "	April 15, "	4.09	1.77
15,416 [1]	♀	" " "	" " "	4.07	1.77
15,423 [1]	♀	La Paz, " "	Feb. 14, "	4.25	1 80
15,421 [1]	♀	" " " "	March 28, "	3.98	1.70
15,422 [1]	♀	" " " "	Feb. 14, "	3.90	1.68
		Average,		4.04—	1.72+

[1] Collection William Brewster.

Tachycineta thalassina lepida.

Mus. No.	Sex	Locality	Date	Wing	Tail
42,416 [1]	♂	Sebastopol, Cal.	April 19, 1885	4.62	1.92
13,222 [1]	♂	" "	" 20, 1886	4.51	1.87
13,220 [1]	♂	" "	" " "	4.50	1.94
13,221 [1]	♂	" "	May 26, 1885	4.26	1.90
678 [1]	♂	Marin Co., "	Sept. 3, 1878	4.57	1.95
5,255 [1]	♂	" " "	April 16, 1880	4.53	1.86
5,336 [1]	♂	" " "	March 30, 1883	4.52	1.98
679 [1]	♂	" " "	Sept. 3, 1878	4.43	1.93
——— [1]	♂	Huachuca Mts., Arizona	May 24, 1888	4.58	1.89
45,516 [1]	♂	Brit. Columbia	April 12, 1888	4.80	1.80
47,363 [1]	♂	Sumas, " "	May 5, 1897	4.72	2.00
45,515 [1]	♂	Chilliwack, " "	April 9, 1891	4.50	1.80
21,946 [1]	♂	Pinos Altos, Mexico	June 8, 1888	4.50	1.90
15,499 [2]	♂	Deer Creek, Col.	July 10, 1871	4.54	1.99
15,497 [2]	♂	" " "	" " "	4.51	1.75
15,498 [2]	♂	" " "	" " "	4.50	1.90
15,496 [2]	♂	" " "	" " "	4.45	1.80
——— [2]	♂	Nicasio, Cal.	May 9, 1879	4.78	1.98
33,299 [2]	♂	" "	" " "	4.70	1.95
			Average,	4.55+	1.90+
675 [1]	♀	Mill City, Col.	May 24, 1877	4.54	1.89
5,899 [1]	♀	Cienega Station, Arizona	April 16, 1881	4.28	1.79
676 [1]	♀	Marin Co., Cal.	June 12, 1877	4.10	1.73
33,298 [2]	♀	Nicasio, Cal.	April 12, 1879	4.41	1.72
			Average,	4.33+	1.78+

The Violet-green Swallow of the Cape Region furnishes an interesting illustration of the recognized fact that isolated, non-migratory birds are given to having shorter wings than those which regularly perform extended journeys, for in respect to the length of the wing it is almost if not quite as much smaller than the form which breeds in the regions lying further to the northward (*i. e.* California, Oregon, Washington, and British Columbia) as the latter is smaller than true *thalassina* of the Mexican table-land still further to the southward. This difference, shown in the foregoing tables of measurements, is the only essential one which I am able to find between *lepida* and *brachyptera*. In the material which I have examined it appears to be not only marked but constant. There can be little question, however, that the two birds really come together and intergrade in the central portions of the Peninsula.

[1] Collection William Brewster.
[2] Collection Mus. Comp. Zoöl.

This is the characteristic Swallow of the Cape Region, if not the only representative of the Hirundinidae, excepting the Western Martin, which breeds there regularly and plentifully. About La Paz and other places on or near the coast it perhaps occurs only in winter, as Mr. Belding indicates, but Mr. Frazar found it common on the Sierra de la Laguna in May and early June, and at Triunfo and San José del Rancho in late June and July. On the summit of La Laguna it was nesting late in May, and one was seen flying over the highest peak of this mountain on December 2, while, "at the same time, the sunlight glistened on the backs of others skimming about a cañon six or eight hundred feet below." None were observed at San José del Cabo in early autumn among the hordes of migrating Barn and Cliff Swallows, but a flock was noted at Santiago on November 23.

It is not probable that *brachyptera* ranges far to the northward of the Cape Region, but it is likely to have been the Violet-green Swallow which Mr. Bryant found "nesting in the holes made by the Gila Woodpecker in giant cacti," near Comondu.

Riparia riparia (Linn.).

Bank Swallow.

Clivicola riparia Bryant, Zoe, II. 1891, 195 (San José del Cabo).

Mr. Bryant seems to be the only observer who has met with the Bank Swallow in the Cape Region or, indeed, in any part of Lower California. He states that at evening, for a week or two during the early part of September, 1890, he "witnessed a remarkable flight of swallows, as they followed the course of the river" at San José del Cabo. "The birds were principally bank swallows (*Clivicola riparia*), with some rough-winged swallows (*Stelgidopteryx serripennis*) among them, and occasionally the large western purple martins (*Progne subis hesperia*) were associated with the thousands of swallows; about sundown the air seemed filled with swallows where during the day they were not abundant."

The occurrence of this species in Lower California is not surprising, for its general range along or near the Pacific coast extends from Alaska to Costa Rica.

Stelgidopteryx serripennis (Aud.).

Rough-winged Swallow.

Stelgidopteryx serripennis Bryant, Zoe, II. 1891, 195 (San José del Cabo).

The Rough-winged Swallow is represented in Mr. Frazar's collection by three specimens, all young males killed at San José del Cabo late in August, — two on the 23d, and the third on the 25th. In his journal, under date of

August 28, the species is noted as "very abundant," but is not afterwards mentioned. Mr. Bryant found it in moderate numbers at the same locality during the early part of September, 1890.

This Swallow ranges as far north on the Pacific coast as British Columbia, and as far south as Guatemala. In California it is rather common and widely distributed in summer.

Ampelis cedrorum (Vieill.).

Cedar Waxwing.

Ampelis cedrorum Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 306, 307 (Cape Region).

Mr. Belding gives the Cedar Waxwing as "very rare" in the Cape Region, a statement confirmed by the experience of Mr. Frazar, who met with the bird on but one occasion, at San José del Rancho on December 22, when two specimens were taken from a flock containing about a dozen. Mr. Bryant mentions seeing a small flock at Comondu on April 7, 1888, and Mr. Anthony found the species "rather common about Valladares" in late April and early May, 1893.[1]

In California the Cedar Waxwing is known only as an irregular and rather infrequent winter visitor, but it breeds commonly in portions of Oregon and northward into British Columbia.[2] In winter it migrates as far southward as Guatemala and Honduras.

Phainopepla nitens (Swains.).

Phainopepla.

Phainopepla nitens Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301, 303 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 534 (Cape Region); VI. 1883, 345 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307 (Cape St. Lucas; Cape Region).

Phaenopepla nitens Baird, Rev. Amer. Birds, pt. I. 1866, 416 (descr.; Cape St. Lucas).

This species is resident in the Cape Region, and apparently about equally common there at all seasons. It is represented in Mr. Frazar's collection by a large series of specimens, most of which were obtained at San José del Rancho in July, and at La Paz in February, March, and April. I have also two examples which were shot at Triunfo in June, and two others taken in the

[1] Zoe, IV. 1893, 243.

[2] In a late number of the Condor (III. 1901, 146, 147) Mr. Grinnell gives a full and interesting statement of the distribution of the Cedar Bird in California and to the northward near the Pacific coast.

Victoria Mountains (opposite Carmen Island) in early March. The bird appears to be chiefly confined to the foot-hills of the mountains, and to the arid region lying between them and the coast, for neither Mr. Belding nor Mr. Frazar found it on the Sierra de la Laguna. The former observer mentions it among the species which he noted along the Pacific coast between Cape St. Lucas and a point thirty miles to the northward of Todos Santos. Mr. Bryant states that it is "common near La Giganta (San Pedro and San Julio plains)," and that Mr. Anthony met with it "from Ensenada southward, up to an altitude of 6,000 feet . . . usually in mesquite thickets."

The Phainopepla is a common resident of most of southern California as well as of the greater part of Mexico.

Lanius ludovicianus excubitorides (Swains.).

White-rumped Shrike.

(?) *Collurio excubitorides* Baird, Rev. Amer. Birds, pt. I. 1866, 445–450 (crit.; Cape St. Lucas; San Nicolas).

Lanius ludovicianus excubitorides Belding, Proc. U. S. Nat. Mus., V. 1883, 537, part at least (Cape Region).

Lanius ludovicianus gambeli (not of Ridgway) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307, part at least (Cape Region).

Mr. Belding asserts that this form is "common" in the Cape Region, but Mr. Bryant omits it altogether from his catalogue, and cites Mr. Belding's mention under *gambeli*. Mr. Frazar's collection, however, contains two unmistakable specimens of *excubitorides*, both males taken at Triunfo on December 12 and 14 respectively. Hence the "white-rumped" bird must be restored to the list; but whether it breeds in this region or visits it only in winter, remains to be ascertained. It "occurs in the eastern and sometimes also the central portions" of California, while *gambeli* "belongs chiefly to the coast district" of that State, according to Mr. Ridgway, as quoted by Mr. Keeler.[1] I have numerous winter specimens of *excubitorides* from Guaymas and Alamos, western Mexico, and others have been taken at Mazatlan.

Lanius ludovicianus gambeli Ridgw.

California Shrike.

(?) *Collurio excubitorides* (not *Lanius excubitorides* Swainson) Baird, Rev. Amer. Birds, pt. I. 1866, 445–450 (crit.; Cape St. Lucas; San Nicolas).

(?) *Lanius ludovicianus excubitorides* Belding, Proc. U. S. Nat. Mus., V. 1883, 537, part (Cape Region).

(?) *Lanius ludovicianus gambeli* Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307, part (Cape Region).

[1] Zoe, I. 1890, 251.

Mr. Ridgway in the Manual[1] restricts the distribution of *L. l. gambeli* to "California, especially coast district," at the same time including Lower California in the habitat of *excubitorides*, but the majority of the Shrikes collected by Mr. Frazar are certainly *gambeli*. They are quite as dark both above and beneath as any of my California examples, and, like the latter, are very distinctly "undulated on the breast with grayish." The series contains several specimens, however, which are variously intermediate between the two forms just mentioned, and one bird (male, No. 15,433, Triunfo, December 14, 1883), which has the gray of the upper parts nearly as pure and light, and the white of the lower parts almost as clear, as in the most extreme representatives of *excubitorides*. To this form it must be referred, despite the fact that it shows a few faint transverse lines on the breast and sides, — a feature by no means uncommon in autumnal specimens of *excubitorides*.

Two birds (Nos. 86,256 ♂, and 86,257 ♀) in the National Museum Collection, both taken at La Paz, on December 15, 1881, by Mr. Belding, are also referable to *excubitorides*, although neither is typical of that form. A third example (No. 26,438) without date, obtained by Xantus at Todos Santos, is in excessively worn plumage and looks like a breeding bird. The feathers are so ragged and faded that their original coloring can only be guessed at. This specimen is remarkable in respect to its bill, which in length exceeds that of any representative of the *ludovicianus* group which I have examined, while its depth is also exceptional, as will be seen by the following measurements: — Length of culmen from base, .97; from feathers, .73; from nostril, .55; depth of bill at nostril, .38.

This is the common and characteristic Shrike of the Cape Region, where, however, according to Mr. Frazar, it does not breed, all the birds which he met with being observed in autumn, winter, or early spring. Their southward migration evidently begins at a rather early date, for he noted a specimen at San José del Cabo on August 31, and a "marked increase" in numbers by September 10. They were rather rare at Triunfo in December, but very common about La Paz in January and February. Mr. Bryant "found on Cerros, Guadalupe, and Santa Margarita Islands, and in several places on the peninsula, birds which have been referred to this race. Some Mexican children at Juncal had six young in a cage, supposing they were mocking-birds." The last statement establishes the fact that some form of Lanius breeds at Juncal, which is near the Pacific coast of the Peninsula opposite Magdalena Island, and hence not far to the northward of the Cape Region, but whether or not Mr. Bryant was correct in referring the young which he saw to *gambeli* is perhaps open to question. He states that Mr. Anthony has met with the latter race "along the entire northwestern coast region" of Lower California.

[1] Man. N. Amer. Birds, 2d ed., 1896, 467.

Vireo gilvus swainsoni (Baird).

Western Warbling Vireo.

Vireosylvia gilva swainsoni Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (Miraflores).
Vireo gilvus swainsoni Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307 (Miraflores).

Although of late denied recognition by many ornithologists, the form *swainsoni* is, in my opinion, a good subspecies. Of the several characters which have been claimed for it the best are those relating to the bill, which is almost invariably smaller, more depressed, and darker-colored than in true *gilvus*. The Lower California bird does not appear to differ materially from that of California, Oregon, and Washington, but all my specimens from the Pacific slope north of Mexico are smaller than those from the Rocky Mountains, while the latter, in turn, are very decidedly inferior in size to some breeding examples in my collection obtained by Mr. Frazar among the Sierra Madre Mountains of Chihuahua, Mexico.

Mr. Frazar found the Western Warbling Vireo common on the Sierra de la Laguna in May and early June, and at San José del Rancho in July. It was less numerous at Triunfo, probably because of the scarcity of trees in that locality. On La Laguna the birds were paired and apparently about to breed by the middle of May, but at San José del Rancho and Triunfo none were found nesting until the middle of July. It was an easy matter to discover their nests, for the male, like that of our eastern form, is in the habit of singing while taking his turn at covering the eggs.

This Vireo may prove to be resident in the Cape Region, for Mr. Frazar shot a male at San José del Rancho on December 23. To the northward it has apparently been detected at but two localities on the Peninsula, — Comondu, where a single specimen was taken on April 12, 1888, by Mr. Bryant, and San Fernando, where Mr. Anthony states that it occurs only during migration, and then but rarely.[1]

V. g. swainsoni is a common summer bird in California and northward to British Columbia. It migrates as far southward as the Isthmus of Tehuantepec.

Vireo solitarius lucasanus Brewst.

St. Lucas Solitary Vireo.

Vireosylvia solitaria Baird, Rev. Amer. Birds, pt. I. 1866, 347, 348, part (Cape St. Lucas).
[*Vireo*] *solitarius* Coues, Key N. Amer. Birds, 1872, 121, 122, part.
Vireo solitarius Coues, Check List, 1873, 25, no. 127, part.

[1] Auk, XII. 1895, 142.

Lanivireo solitarius cassini (not *Vireo cassinii* Xantus) Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 19, no. 141 a, part. Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (breeding at San José del Cabo; Miraflores).

Vireo solitarius cassini Coues, Check List, 2d ed., 1882, 44, no. 178, part.

Vireo solitarius cassinii (not *Vireo cassinii* Xantus) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307 (breeding at San José del Cabo; Miraflores).

Vireo solitarius lucasanus Brewster, Auk, VIII. 1891, 147, 148 (orig. descr.; types from San José del Rancho and Triunfo). A. O. U. Comm., Auk, IX. 1892, 106, no. 629 d; Check List, 2d ed., 1895, 265, no. 629 d. Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 607 (descr.; Lower Calif.).

[*Vireo solitarius*] var. *lucasana* Dubois, Synop. Avium, fasc. VII. 1901, 472 (Basse-Californie).

So far as known, this Vireo is strictly confined to the Cape Region, where it is found at all seasons of the year, although most numerously, perhaps, in summer. Its breeding range extends from the coast at San José del Cabo, where it occurs almost exclusively in cultivated grounds about houses, to Miraflores and San José del Rancho, at both of which places it is common. Only a few were seen by Mr. Frazar at Triunfo, and none on the Sierra de la Laguna, while but one bird was taken (on April 4) at La Paz, which appears to be beyond the northern limits of its usual range. At San José del Rancho two specimens were killed in December, one on the 20th, the other on the 23d. No form of *V. solitarius* is recorded by Mr. Bryant from anywhere north of La Paz in Lower California, but Mr. Belding reports that Colonel Goss found *V. s. cassinii* at Tia Juana, on March 20,[1] and Mr. Anthony states that at San Pedro Martir it was "not uncommon in the pines where it was first seen May 13," and where "it became more common a week or so later."[2] It is a common summer resident of portions of California, and may occasionally visit the Cape Region of Lower California during migration or in winter.

A nest of *V. s. lucasanus* containing four fresh eggs, found by Mr. Frazar at San José del Rancho on July 15, was suspended in a fork at the extremity of a long, *leafless* branch of an oak at a height of about fifteen feet. It is composed chiefly of a gray, hemp-like fiber mixed with grass stems and thin strips of bark. There are also a few spiders' cocoons loosely attached to the bottom and sides, and apparently intended as ornaments. The interior is very neatly lined with fine, wiry, reddish-brown grass circularly arranged. This nest measures externally 3.00 in diameter by 2.50 in depth; internally, 2.00 in diameter by 1.50 in depth. The walls are half an inch thick in places. The eggs measure respectively: .79 × .56, .79 × .57, .80 × .57, and .80 × 58. They are white, with a slight creamy tint, and are spotted, chiefly about the larger ends, with reddish brown and black. Both nest and eggs are very like those of *V. solitarius*.

[1] Occ. Papers Calif. Acad. Sci., II., Land Birds Pacif. District, 1890, 201.

[2] Zoe, IV. 1893, 244.

Vireo huttoni stephensi Brewst.

Stephens's Vireo.

Vireo huttoni stephensi Belding, Proc. U. S. Nat. Mus., VI. 1883, 347 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 307 (Victoria Mts.).

Lower California specimens of Stephens's Vireo have larger bills than those from Arizona, but I can discover no other differences. A young bird in juvenal plumage (No. 10,248, Santa Rita Mountains, Arizona, July 9, 1884, F. Stephens) differs from the adult in having the outer edges of the wing quills and tail feathers olive green; the upper tail coverts tinged with olive; the back, nape, and crown suffused with drab; the wing bands yellowish; and the under parts lighter, the middle of the abdomen and breast being nearly pure white.

Autumnal birds in winter plumage, of which the Lower California collection contains several representatives, show a tinge of olive above and more or less brownish beneath, while the outer edges of the wings and tail are greenish olive, as with the young in juvenal plumage. The deepest colored autumnal specimens, however, are much paler and grayer than any of my examples of *V. huttoni*.

Mr. Belding, who was the first to detect Stephens's Vireo in Lower California, gives it in his list of mountain birds as "common above 3,000 feet altitude," but "not observed below this." Mr. Frazar found it numerous among the pines on the Sierra de la Laguna in May and early June, but none of the specimens killed there showed any signs of breeding. He also met with it at San José del Rancho in July, although not in any numbers. During his second visit to La Laguna, the last week of November, two birds were shot and several others seen on the very summit of this mountain, and a few days later (on December 2) a single specimen was taken at Triunfo, indicating that at least a few individuals winter in the Cape Region, to the northward of which, on the Peninsula, this Vireo has not yet been noted. It inhabits southern Arizona, and is a common bird in many parts of western Mexico.

Vireo pusillus Coues.

Least Vireo.

Vireo pusillus Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I 1874, 391–393, pl. 17, fig. 14 (descr.: Cape St. Lucas).

Vireo bellii pusillus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 308 (Cape Region).

Mr. Grinnell has recently separated the Least Vireo of California from that of "Arizona and southern Lower California," under the name *Vireo pusillus*

albatus, the type locality of the new form being Pasadena, California.[1] I have seen no specimens from this precise locality, but I have a number from Riverside, which, as far as I can discern, are indistinguishable from the breeding birds obtained in the Cape Region by Mr. Frazar. My skins from Arizona and Oposura, Mexico, are, as a rule, somewhat deeper colored, with more greenish on the flanks, but these differences (they are the chief ones claimed by Mr. Grinnell) do not seem to me sufficiently pronounced or constant to warrant the formal separation of the birds in question. If they be recognized as distinct races, however, I feel very sure that the bird of the Cape Region should be referred to *albatus* and not, as Mr. Grinnell appears to think, to the typical form.

The Least Vireo is known to occur in the Cape Region only during autumn, winter, and spring. Mr. Belding characterizes it as rare, but Mr. Frazar's collection contains no less than fourteen specimens. Of these, two were killed at Triunfo on April 20 and 21 respectively; three at Santiago in the latter part of November; and the remaining nine at San José del Cabo at various dates between August 30 and November 11. Mr. Bryant "obtained specimens on Santa Margarita Island in winter, and found them in May at San Fernando; at Comondu in March; at San Benito in April, and at El Rosario, May 21, 1889." "Mr. Anthony found it common in willow thickets on the northwest coast up to 3,000 feet altitude. Nesting from 500 to 2,500 feet altitude" (Bryant); "quite common and evidently nesting in the mesquite thickets" about the mission at San Fernando,[2] and "very common all along the base of the mountain, but probably not reaching above the live oaks at 4500 feet," on San Pedro Martir.[3]

In California, the Least Vireo is a common summer resident to a little north of the latitude of San Francisco. It is also found in Arizona and is said to range throughout western Mexico, although my collectors have obtained it only at Oposura, in the province of Sonora.

Vireo vicinior Coues.

Gray Vireo.

Mr. Frazar killed a Gray Vireo at Triunfo the first week of April and another at San José del Cabo on November 10. These specimens are the only ones that have been thus far found in the Cape Region, but further to the northward in Lower California, Mr. Belding has "noted them from south of Campo, at an altitude of 3,000 feet in May, 1884; near San Rafael in May, 1885, and the mountains east of Ensenada in April, 1887."[4]

[1] Condor, III. 1901, 187.
[2] Anthony, Auk, XII. 1895, 142.
[3] Anthony, Zoe, IV. 1893, 244.
[4] Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 308.

V. vicinior is a rare summer resident of San Diego and San Bernardino counties, California, but is not known to occur further northward on the Pacific coast. It is common in portions of Arizona and is also found in New Mexico and western Texas. I have only two specimens from western Mexico, both taken by Mr. Frazar at Guaymas in January, 1887.

Mniotilta varia (Linn.).

Black and White Warbler.

Mr. Frazar's collection contains a female Black and White Warbler, taken at Triunfo on December 20, 1887. This is the first known instance of the occurrence of the species in Lower California, and for the Pacific Coast district north of the Peninsula there are, I believe, but three records,[1] all of which relate to California. These four birds were, no doubt, chance wanderers from the regular path of migration which, in the United States, lies well to the eastward of the Rocky Mountains. The Black and White Creeper is common in Central America during winter, and it also passes into South America as far as Bogota and Venezuela.

Helminthophila celata (Say).

Orange-crowned Warbler.

(?) *Helminthophaga celata* Baird, Rev. Amer. Birds, pt. I. 1864, 1865, 176, 177 (San José; Cape St. Lucas).

Helminthophila celata Belding, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region). Ridgway, *Ibid.* (crit.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 308 (Cape Region).

According to Mr. Ridgway, an Orange-crowned Warbler (No. 86,272 U. S. Nat. Mus.) taken by Mr. Belding near La Paz in January, 1882, "appears to be referable to this form."

Mr. Frazar also obtained one (♀ No. 15,121, San José del Cabo, October 17, 1887) which is nearly or quite typical *celata*, while several others in his series are variously intermediate between *celata* and *lutescens*. The occurrence of true *celata* in the Cape Region is in no way surprising, for it breeds in the interior of Oregon and British Columbia and thence northward to Alaska. No doubt some of the birds which visit these regions in summer regularly pass through

[1] Bryant, Proc. Calif. Acad. Sci., 2d ser., I. 1888, 48, "male in good plumage" found on South Farallone Island on May 28, 1887; Grinnell, Pub., II. Pasadena Acad. Sci., 1898, 44, immature female taken near Pasadena, Los Angeles county, on October 2, 1895; Emerson, Condor, III. 1901, 145, "male in fall plumage" obtained at Point Lobos, Monterey county on September 8, 1901.

Lower California on their way to and from western Mexico, where *celata* is common in spring and autumn. It is said to winter in southern Mexico, the extreme southern limit of its known range at that season being Guatemala.

Helminthophila celata lutescens (Ridgw.).

Lutescent Warbler.

(?) *Helminthophaga celata* (not *Sylvia celata* Say) Baird, Rev. Amer. Birds, pt. I. 1864, 1865, 176, 177 (San José; Cape St. Lucas).

Helminthophila celata lutescens Belding, Proc. U. S. Nat. Mus., V. 1883, 536 (Cape Region); VI. 1883, 347 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 308 (Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas).

This, the characteristic form of the Cape Region, is a rather common winter resident, arriving from the north early in October and departing again before the end of February, according to Mr. Frazar, who took no specimens later than February 9. He found the bird at La Paz, San José del Cabo, Santiago, Triunfo, and San José del Rancho, but not on the Sierra de la Laguna. Mr. Bryant records it from Santa Margarita Island (January), Comondu (March), San Benito Cañon (April 10), and El Rosario (May 21), while Mr. Anthony has met with it during the spring migration (in late April and early May) at San Fernando and about the base of San Pedro Martir.[1]

H. c. lutescens winters as far north as San Diego. Its summer range includes most of California and the regions northward to Alaska, chiefly on the Pacific slope. I have typical specimens from western Mexico.

Dendroica aestiva (Gmel.).

Yellow Warbler.

(?) *Dendroeca aestiva* Belding, Proc. U. S. Nat. Mus., V. 1883, 536, part (Cape Region).

(?) *Dendroica aestiva* Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309, part (Cape Region).

All but one of the eleven Yellow Warblers obtained in the Cape Region by Mr. Frazar are young birds which were killed in autumn. The exception, a male taken at La Paz on February 5, is in nearly full nuptial condition. This bird seems to be *sonorana*, while four of the young females (from San José del Cabo) are quite typical of that race. The remaining six birds apparently belong to the form which breeds in California, and which, although usually called *aestiva*, has been referred by a few writers to *morcomi*.[2] It differs rather

[1] Auk, XII. 1895, 142; Zoe, IV. 1893, 244.

[2] *Dendroica aestiva morcomi* Coale, Ridgway Orn. Club, Bull., II. 1887, 82.

constantly from *aestiva* of eastern North America in having the chestnut streaks on the under parts narrower and fainter — in this respect showing an approach to *sonorana*, from which, however, it may be readily distinguished by the decidedly darker, greener coloring of its upper parts. The female is similar to *aestiva* (although less often streaked beneath) and hence quite different from that of *sonorana*, which is grayish above and clay-colored beneath, with but faint traces of yellowish on the body plumage. On the whole the Yellow Warbler of California seems to me too nearly like true *aestiva* to be recognized as a distinct subspecies. In any case it should not be called *morcomi*. At least Mr. Ridgway and I agree in considering the type of that supposed form merely an exceptionally faintly streaked specimen of *aestiva*, of which, moreover, the National Museum possesses a number of *perfectly typical* examples from the same general region (i. e. Utah and Montana) one of them being actually from the same locality (Fort Bridger).

Mr. Frazar found the Yellow Warbler rather rare in January and February at La Paz, where it frequented the shrubbery in the town gardens. It was not noted after March 1 (save on April 21, when one was seen at Triunfo) until August 28, when it was again met with at San José del Cabo. Here it became common by the latter part of September, but it kept so closely concealed in dense thickets as to be much oftener heard than seen. A single specimen was also taken at Santiago on November 16. To the northward of La Paz it does not seem to have been observed by any one except Mr. Anthony, who "says it is common on the northwest coast up to 2,500 feet altitude" (Bryant), and "common during migration in the valleys and as a summer resident in the higher altitudes," on San Pedro Martir.[1]

The Yellow Warbler breeds plentifully on the Pacific coast from southern California to Washington, being replaced in British Columbia and to the northward by the closely allied subspecies, *rubiginosa*. It is not known to occur north of the southern boundary of the United States during the winter months, when it migrates to Central America and the more northern portions of South America.

Dendroica aestiva sonorana Brewst.

Sonora Yellow Warbler

(?) *Dendroeca aestiva* Belding, Proc. U. S. Nat. Mus., V. 1883, 536, part (Cape Region).

(?) *Dendroica aestiva* Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309, part (Cape Region).

Among the Yellow Warblers collected by Mr. Frazar there are, as I have just stated in another connection, four young females killed at San José del Cabo — on October 5, 12, 20, and 27 respectively — which are perfectly typical speci-

[1] Anthony, Zoe, IV. 1893, 244.

mens of *sonorana*, besides a male in nearly full nuptial plumage obtained at La Paz on February 5, and also referable to this form, which has not been previously reported from anywhere on the Peninsula; nor does Mr. Belding include it in his Land Birds of the Pacific District, although it occurs, at least casually, in the extreme southern part of California, for I have a female (No. 6,349) taken by Mr. F. Stephens at Riverside on September 14, 1881. The true home of *sonorana* is, however, southern Arizona and western Mexico, the most southern locality from which I have received specimens being Alamos, Sonora.

Dendroica aestiva rubiginosa (Pall.).

Alaskan Yellow Warbler.

Denaroeca aestiva (not *Motacilla aestiva* Gmelin) Belding, Proc. U. S. Nat. Mus., V. 1883, 536, part at least (Cape Region).

Dendroica aestiva (not *Motacilla aestiva* Gmelin) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309, part at least (Cape Region).

Of this form of the Yellow Warbler, characterized by the nearly uniform dark olive green of the upper parts which almost completely overlies and obscures the yellow on the rump and crown, the National Museum collection possesses a perfectly typical female (No. 87,531) taken by Mr. Belding at San José del Cabo on April 17, 1882. This is the only specimen which I have seen from any part of Lower California. Mr. Nelson has recorded *rubiginosa* from as far south as the Tres Marias Islands, where it occurs, of course, only as a migratory visitor. According to its describer, Mr. Oberholser,[1] it breeds from British Columbia to Alaska.

Dendroica bryanti castaneiceps Ridgw.

Mangrove Warbler.

Dendroeca vieilloti bryanti (not of Ridgway, Amer. Nat., VII. 1873, 606) Ridgway, Proc. U. S. Nat. Mus., IV. 1882, 414, 415 (crit.; La Paz). Belding, *Ibid.*, V. 1883, 536 (La Paz; Pichalinque Bay; Espiritu Island).

D.[endroica] bryanti β. castaneiceps Ridgway, *Loc. cit.*, VIII. 1885, 350 (orig. descr.; type from La Paz).

Dendroica bryanti castaneiceps Ridgway, *Loc. cit.*, footnote (name only). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309 (La Paz; Pichalinque Bay; Espiritu Santo Island).

Two of the five males taken by Mr. Frazar agree closely with Mr. Ridgway's description of the type, and two disagree in having the breast and sides distinctly but finely streaked with chestnut rufous. The fifth (No. 15,087, La Paz, February 7, 1887), which probably represents some unusual if not abnormal phase of coloration, differs very decidedly from the others as well as from all

[1] Auk, XIV. 1897, 78.

the specimens mentioned by Mr. Ridgway. It has the head dull chestnut, very pale and mixed with whitish on the throat, mottled with greenish on the crown; the jugulum, sides of the neck and the middle of the breast *white* with occasional small patches or single feathers of a pale yellow color and numerous fine, chestnut-rufous streaks on the breast; the remainder of the under parts pale primrose yellow mixed with whitish. The back, wings, and tail are nearly as in the adult female. The upper mandible is of the usual dusky horn color, but the basal half of the lower mandible of a pale flesh color. The plumage, generally, has a worn and faded appearance.

One of the females in my series (No. 15,088, La Paz, March 21, 1887) has the yellow of the under parts dull gamboge; the crown and superciliary stripe tinged with rufous; the throat obscurely streaked with rufous chestnut. There are also a few nearly obsolete chestnut streaks on the breast.

In the winter and early spring of 1881–82 Mr. Belding found this beautiful Warbler "common in the shrubbery around the Bay of La Paz." It was "also seen at Pichalinque Bay and Espiritu Santo Island. It frequented almost exclusively the mangroves (*Rhizopora mangle*), and is probably resident." During January, February, and a part of March, 1887, Mr. Frazar repeatedly visited all the mangrove thickets that he could find near La Paz, and made every effort to secure a good series of these Warblers, but he took only eight in all and did not shoot more than a pair in any one day. He notes the bird as "rare," but adds that "its numbers increased slightly in March." It cannot be very numerous here at any time, for the total area covered by its favorite mangroves is very limited. Indeed, the place where most of his specimens were obtained "comprises only about two acres, through which winds a small creek, fordable at low tide; but at high water everything is submerged up to the lower branches of the mangroves. I always found the birds working near the surface of the water on the stems of the mangroves or hopping about on the mud, but the males resorted to the tops of the bushes to sing. Their notes are similar in general character to those of the Yellow Warbler."

Mr. Bryant heard the Mangrove Warbler singing "in the mangroves bordering the long *estero* northward from Magdalena Bay, and in the mangroves on Santa Margarita Island," where a male was seen by him on March 2, 1889. It is not unlikely that the localities just mentioned represent the extreme limit of northward distribution of this bird. Southward it is known to range as far as Mazatlan on the western coast of Mexico. On the Atlantic coast of Central America from Belize to Merida, Yucatan, it is replaced by the closely allied *D. bryanti*.

Dendroica auduboni (Towns.).

AUDUBON'S WARBLER.

Dendroica audubonii BAIRD, Rev. Amer. Birds, pt. I. 1865, 188, 189 (Cape St. Lucas).

Dendroeca auduboni BELDING, Proc. U. S. Nat. Mus., V. 1883, 536 (Cape Region); VI. 1883, 347 (Victoria Mts.).

Dendroica auduboni BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309 (Victoria Mts.; Cape Region).

Young females of this species in autumn plumage not infrequently lack all traces of yellow on the throat. In this condition, which is represented by several birds in Mr. Frazar's collection, they are not easily distinguishable from the young of *coronata*, although their upper parts are usually somewhat more ashy in tone, and their wings and tails longer. Even in these respects the two species occasionally resemble one another so closely as to render their discrimination a matter of no slight difficulty.

Audubon's Warbler appears to find only a winter home in the Cape Region, which it reaches rather late in autumn, judging by the experience of Mr. Frazar who first observed it at that season on November 9 at San José del Cabo. Later he found it common and universally distributed over the entire country, not less abundantly, indeed, on the summit of the Sierra de la Laguna than throughout the lowlands bordering the coast. At La Paz the last stragglers left for the north before the end of the first week of March.

Mr. Bryant records Audubon's Warbler from several places in the upper portions of the Peninsula, and Mr. Anthony reports that it is "very abundant during migrations" about San Pedro Martir, where, however, it is not known to breed, even on the summit of the elevated plateau.[1] It is resident in California, breeding in the mountains as far south as San Bernardino county, and also ranging in summer into British Columbia, but not, apparently, to Alaska, where it is replaced by *D. coronata*. Its southward migration extends to Guatemala.

Dendroica nigrescens (TOWNS.).

BLACK-THROATED GRAY WARBLER.

Dendroeca nigrescens BELDING, Proc. U. S Nat. Mus., VI., 1883, 347 (Victoria Mts.).

Dendroica nigrescens BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309 (Victoria Mts.).

This is another winter resident, less numerous and widely distributed than *D. auduboni*, but by no means uncommon in places suited to its tastes. Mr. Belding seems to have found it only on the mountains "above 3,000 feet altitude" and "in mountain cañons of about 1,000 feet altitude." Mr. Frazar's experience was essentially similar, although he took one specimen (perhaps a migrant) at La Paz on March 30. The species was rare at Triunfo in April, but common on the Sierra de la Laguna in the latter part of November, and at San José del Rancho in December. All of the ten specimens taken in autumn appear to be *old birds*. Mr. Frazar's latest spring date is April 27, when a female was shot on La Laguna.

[1] Zoe, IV. 1893, 244.

Mr. Bryant took specimens at Tia Juana on May 2 and observed others at Hansen's on May 14. He states that "Mr. Anthony has found it only in the region of San Pedro Martir where it breeds from 7,500 to 11,000 feet altitude."

In California *D. nigrescens* occurs chiefly during migration, but it also breeds sparingly in the Sierras from San Bernardino county northward through Oregon and Washington into British Columbia. It is a common bird in western Mexico in autumn, winter, and early spring, but it has not been found south of the State of Oaxaca.

Dendroica townsendi (Towns.).

Townsend's Warbler.

Dendroeca townsendi Belding, Proc. U. S. Nat. Mus., V. 1883, 549 (Miraflores).
Dendroica townsendi Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 309 (Miraflores).

Mr. Belding's mention of a male seen at Miraflores, on April 4, 1882, is the only record for the Cape Region, but the same observer, according to Mr. Bryant, shot some specimens at Tia Juana on May 2, and "Mr. Anthony has taken a single bird in spring at San Quintin" (Bryant) and another on May 7 at San Fernando, while in 1893, in the region about San Pedro Martir, he saw a dozen or more in the live oaks in Burro Cañon on April 23, and a number of others at Valladares, and "on the west side of San Pedro" on May 3 and 4.[1]

Townsend's Warbler occurs regularly, and at times commonly, in California, at its seasons of migration, as well as occasionally in winter,[2] but it is not known to breed in this State, even among the higher mountains. Its summer range extends from Oregon and British Columbia to Alaska, where it is tolerably common at Glacier in the Yukon valley.[3] During spring and autumn it is apparently more numerously represented in the Rocky Mountains than near the Pacific coast, and in Mexico its principal path of migration evidently lies along the range of the Sierra Madres, for Mr. Frazar found it exceedingly abundant in the early autumn of 1888 in the more elevated parts of the province of Chihuahua. It is said to occur commonly in winter in Guatemala, south of which it has not as yet been found.

Seiurus noveboracensis notabilis (Ridgw.).

Grinnell's Water-Thrush.

Siurus naevius notabilis Belding, Proc. U. S. Nat. Mus., V. 1883, 536 (Cape Region).
Ridgway, *Ibid.* (La Paz; crit.; measurements).
Seiurus noveboracensis notabilis Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 310 (La Paz; Todos Santos).

[1] Zoe, IV. 1893, 244.
[2] Grinnell, Pub. II. Pasadena Acad. Sci., 1898, 46 (Los Angeles county).
[3] Bishop, N. Amer. Fauna, no. 19, 1900, 90.

Mr. Belding and Mr. Frazar agree in considering this a rare bird in the Cape Region. Mr. Frazar took only five specimens, two at La Paz on January 11, one at Triunfo on April 21, and two at San José del Cabo on September 12 and 22, respectively. At the place last named two others were seen, one on September 18, the other on October 4. Mr. Belding also obtained two at La Paz and, according to Mr. Bryant, a third at Todos Santos. The bird has not been reported from anywhere north of La Paz on the Peninsula, and only three specimens are known to have occurred in California, two at Santa Cruz, and one at San Diego. My Lower California examples appear to be typical representatives of *notabilis*. Only one of them is at all yellowish beneath, and in this the yellow is merely a faint tinge.

The summer range of *S. n. notabilis* has not been definitely traced, but it probably lies chiefly in the interior of western North America, north of the United States. Mr. Chapman has recorded[1] two specimens taken at Ducks, British Columbia, in August, but this date is not sufficiently early to prove that they were on their breeding-grounds. Mr. Nelson refers the form which occurs in Alaska to *noveboracensis*,[2] but Mr. Grinnell has since reported[3] that *notabilis* is moderately common in summer in the Kotzebue Sound Region, and Dr. Bishop has taken it in the Yukon valley.[4]

Geothlypis tolmiei (Towns.).

Macgillivray's Warbler.

Geothlypis macgillivrayi Baird, Rev. Amer. Birds, pt. I. 1865, 227 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 536 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 310 (Cape Region).

G.[eothlypis] macgillivrayi Bryant, Zoe, II. 1891, 192 (San José del Cabo).

Mr. Belding found Macgillivray's Warbler only in "mountain cañons," and marks it "rare," but Mr. Frazar met with it in December at San José del Rancho, "where it is certainly a common winter resident." The latter observer's collection contains eight specimens taken in November at this place, five shot in November, and one on April 20, at Triunfo, one killed on November 15 at Santiago, and a bird obtained on February 16 at La Paz. Mr. Bryant records the species only from Tia Juana, where "it occurs as a migrant," and from Comondu, where a female was shot in March, 1888.

G. tolmiei is merely a migratory visitor to the southern part of California, but it breeds sparingly in the central and northern counties, chiefly in or near the mountains, and commonly in Oregon and northward into British Columbia. In winter it goes as far south as Panama.

[1] Bull. Amer. Mus. Nat. Hist., III. 1890, 151.
[2] Rep. Nat. Hist. Coll. Alaska, 1887, 204.
[3] Pacif. Coast Avifauna, no. 1, 1900, 56, 57.
[4] N. Amer. Fauna, no. 19, 1900, 91.

Geothlypis trichas arizela Oberh.

Oberholser's Yellow-throat.

Geothlypis trichas (not *Turdus trichas* Linnaeus) Baird, Rev. Amer. Birds, pt. I. 1865, 220, 222, part (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 536 (Cape Region).

Geothlypis trichas occidentalis (not of Brewster), Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 310 (Cape Region).

G.[eothlypis] trichas occidentalis (not of Brewster) Bryant, Zoe, II. 1891, 192 (San José del Cabo).

Geothlypis trichas arizela Oberholser, Auk, XVI. 1899, 256–258 (orig. descr.; type from Fort Steilacoom, Wash.; La Paz; San José del Cabo).

The large series of autumnal specimens of this form collected by Mr. Frazar[1] represents very fully the winter plumages of the adult and young of both sexes.

The adult male in autumn has the crown, nape, back, wing coverts, under tail coverts, and sides of body strongly tinged with cinnamon (nearly pure cinnamon brown on the crown and flanks); the black feathers of the mask tipped with grayish on the auriculars and sides of the neck, with mixed gray and cinnamon on the forehead;[2] in every other respect it is similar to the male in spring.

The young male in autumn differs from the adult at the same season in having the black of the mask restricted to a broad malar stripe and in possessing some concealed spotting at the base of the feathers of the forehead. The upper parts, also, show less cinnamon, and the entire top of the head is nearly concolor with the back. The yellow of the breast is sometimes tinged with saffron, but this is also the case with some apparently mature birds.

The adult female in autumn is rather more olivaceous above than are specimens of the same sex taken in spring, and the throat and breast are of a deep ochre yellow tinged with saffron. The forehead is suffused with cinnamon as in the spring female.

The young female in autumn has the entire under parts nearly uniform clayey buff, lightest on the middle of the abdomen, slightly brownish on the flanks. The upper parts are plain, dull, grayish olive, nearly uniform everywhere, but with a slight tinge of cinnamon on the forehead. In some specimens the breast is suffused with dull yellowish, but none show any yellow on the throat. The tint of the under parts varies considerably with different

[1] It is possible that some of the immature Yellow-throats in this series are referable to *G. t. scirpicola*, while others may be *G. t. sinuosa*, but both these forms are said by their describer to be "permanently resident" in California (see Grinnell, Condor, III. 1901, 65).

[2] In a very few birds there is no trace of this light tipping, the mask being quite as pure black as in spring.

individuals, and there is often a trace of cinnamon on the flanks as well as, sometimes, on the breast. There is no difficulty whatever in separating *arizela*, in any of the plumages just described, from its eastern representative, *trichas*, the two appearing to differ quite as markedly in their immature or autumnal conditions as in full spring dress. I have not been able to make a satisfactory comparison of the autumnal or winter plumages of *arizela* with those of *occidentalis*, but breeding birds of these forms may be easily distinguished by the characters to which Mr. Oberholser has called attention.

Mr. Frazar found this Yellow-throat in March at La Paz, where it was rare; in autumn at San José del Cabo, where it was exceedingly abundant; and at San José del Rancho (the only place not directly on the coast), where two specimens were obtained on December 22. At San José del Cabo it was present in small numbers at the date of Mr. Frazar's arrival, August 23, but it did not attain its maximum abundance until about the middle of September, after which its numbers steadily but gradually diminished, although it remained common throughout October, and indeed up to the time of Mr. Frazar's departure, November 13. It probably winters in the Cape Region, but there is no present evidence to show that it ever breeds there.

Throughout the central portions of the Peninsula Mr. Bryant has met with only a single specimen — on Santa Margarita Island. Mr. Anthony, however, found what was probably this subspecies, common "in swamps along the northwest coast" (Bryant), and a few were heard by him in the tules bordering a water hole at San Fernando while they were "not uncommon about the base" of San Pedro Martir in late April and early May.[1]

I have typical examples of *arizela* taken in winter and early spring at Guaymas and Oposura in northwestern Mexico. According to Mr. Grinnell,[2] this form "occurs abundantly in parts of California during the spring and fall migrations," and is found in the breeding season "on the Pacific slope from Central California to British Columbia," while a larger race — *scirpicola* — is "permanently resident in the fresh-water tule beds of the southern coast district," and a smaller one — *sinuosa* — similarly restricted at all seasons to the "salt marshes of San Francisco Bay and vicinity."

Of the value and constancy of the characters which are thought by Mr. Grinnell to distinguish *scirpicola* and *sinuosa* from each other — and from *arizela* — I have no present means of judging, but *arizela* is unquestionably a good subspecies.

Geothlypis beldingi Ridgw.

Belding's Yellow-throat.

Geothlypis beldingi Ridgway, Proc. U. S. Nat. Mus., V. 1882, 344, 345 (orig. descr.; types from San José del Cabo); VI. 1883, 158, footnote (crit.; S. Lower Calif.) Belding, *Ibid.*, V. 1883, 546 (San José; Miraflores; cañons of the

[1] Auk, XII. 1895, 142; Zoe, IV. 1893, 245.

[2] Condor, III. 1901, 65.

Miraflores and Santiago Peaks; Agua Caliente). Sharpe, Cat. Birds Brit. Mus., X. 1885, 356, 357 (descr. ad. male from San José del Cabo). A. O. U., Check List, 1886, 315, no. 682. Coues, Key N. Amer. Birds, 4th ed., 1894, 870 (descr.; Lower Calif.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 20–22 (descr. nest, eggs, and immature plumage from Comondu), 310–312 (quotes Belding as to locality; Comondu; n. to San Ignacio; descr. song; measurements). Allen, Auk, X. 1893, 142 (tropical type).

G.[eothlypis] beldingi Bryant, Zoe, II. 1891, 192 (San José del Cabo). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 524 (descr.; s. portion of Lower Calif.).

[*Geothlypis*] *beldingi* Dubois, Synop. Avium, fasc. VI. 1901, 437 (Basse-Californie).

The large series of specimens obtained by Mr. Frazar probably illustrates every stage of plumage through which this beautiful species regularly passes. Three males, collected in April, agree closely with Mr. Ridgway's description of the specimens taken by Mr. Belding. A fourth, shot on June 20, at Triunfo, disagrees in having a poorly defined but nevertheless rather conspicuous yellow band across the fore part of the back. A female, taken on April 21, differs slightly from Mr. Ridgway's type in having a narrow but perfectly distinct yellowish superciliary stripe and a few dusky feathers in the malar region. The five birds just mentioned are all that Mr. Frazar secured in spring.

Age and seasonal variations: — Young in juvenal plumage. Female (No. 15,275, San José del Cabo, September 5, 1887). Above dull brownish drab, the wings faintly, the tail distinctly, tinged with olive; greater and middle wing coverts edged and tipped with rusty, forming obscure wing bands; below pale brownish buff, deepest on the sides, abdomen, and upper portion of the breast, unmixed with yellow save on the chin, where there are a few bright yellow feathers, evidently those of the first winter plumage; bend of wing slightly yellowish; under surface of wing ashy white; lores with a faint yellowish tinge.

Another specimen, apparently of about the same age, taken on September 12, is generally similar but rather browner above and on the breast and throat. A young male, obtained on August 23, differs from both of the specimens just described in having a few dark olive feathers on the back, a patch of bright yellow on the chin and upper part of the throat, a good many yellow feathers sprinkled over the breast, some black feathers in the lores, and a short black malar stripe. A careful examination of its plumage shows that all these olive, yellow, and black feathers belong to the first winter plumage, which was evidently just beginning to start when the bird was killed. Some of the feathers of the under parts, which appear to belong to the juvenal plumage, are, however, distinctly yellowish buff, as in the young bird described by Mr. Bryant.

Adult male in autumn. Differing from the spring male only in having the yellow of the crown paler and tinged with grayish white; the upper parts of a deeper, browner olive, tinged slightly on the occiput and nape with purplish brown; the yellow of the under parts richer with more decided brownish on the sides and flanks; the base of the lower mandible flesh colored; the remainder

of the bill dark horn colored instead of black. The black mask is wholly unmixed with any lighter color.

Male in first winter plumage. Differing from the adult only in having the feathers of the black mask slightly tipped with grayish or yellowish, especially on the forehead; the yellow border of the mask more restricted and mixed with brownish; the breast and under tail coverts tinged with brownish saffron; the flanks and sides rich purplish cinnamon.

Adult female in autumn. Differing from the spring female only in being slightly grayer above.

Female in first winter plumage. Differing from the adult female in autumn only in having the upper parts tinged with reddish brown, the throat and breast with brownish saffron, the flanks and sides, as well as the anal region, with cinnamon.

Individual variations: — The width of the black mask where it crosses the forehead varies considerably in different specimens, being in some birds fully twice as wide as it is in others. There is quite as much diversity in this respect among young as with mature birds. One or two males have the entire occiput and nape mixed with concealed yellow. In about ten per cent of the autumnal males, both adults and young, the black of the forehead extends much further back on the left than on the right side of the head. In the most extreme specimens the posterior border of the black band crosses the top of the head obliquely, in a nearly straight line, from a little in front of the right eye to a little behind the left eye. In all cases, however, the black on the sides of the head passes completely around both eyes. At first I was inclined to believe that this remarkable variation was due to unevenness of manipulation on the part of the taxidermist in drawing the skin back over the skull, but careful examination of numerous specimens has convinced me, as well as several others who have looked at the birds, that they present a clear and very interesting case of asymmetry.

This beautiful species was discovered by Mr. Belding (in 1882) in the Cape Region, where it was "common in the few suitable localities around San José, Miraflores, and cañons of the Miraflores and Santiago Peaks. At Agua Caliente a pair were noticed feeding their young just out of the nest, May 7. The only note traced to this species was a loud *chip*. . . . Their habits are quite like those of *G. trichas*, and the eggs are not materially different, if a nest found by my guide on the Miraflores and Todos Santos trail May 6 belonged to this species, as I supposed it did, having seen a fine male near the spot from which it was taken."

Mr. Frazar saw his first Belding's Yellow-throat on April 21 at Triunfo, in a small, deep arroyo where the stream had been dammed for irrigating purposes, making a little pool of water around which grew a quantity of canes and rank grasses, the whole covering an area of about forty yards square. Here were found three pairs, the females of which were apparently incubating, although no nests were discovered. The species was next met with at San José del Cabo, where it proved to be one of the most abundant birds. It was

also very common about the lagoon at Santiago, frequenting rushes, often where the water was three or four feet deep, in this respect differing from Oberholser's Yellow-throat which inhabited thickets of bushes growing on comparatively dry ground. "The song resembles that of the Maryland Yellow-throat, but is so much heavier and fuller that it can be easily recognized." The bird occasionally mounts into the air and sings on wing. Mr. Frazar noticed that the Belding's Yellow-throats diminished sensibly in numbers at the approach of winter, and he is of the opinion that many migrate southward at that season, but this seems improbable, inasmuch as the species has never been detected outside of Lower California.

It is not confined to the Cape Region, however, for Mr. Bryant has found it "on the west coast of lower Purisima cañon, and as far north as San Ignacio." In March, 1888, and April, 1889, it was also met with on the eastern side of the Peninsula at Comondu. Here "the birds kept mainly within the bulrushes and bushes of the creek, but could be called out by imitating the cries of a bird in distress. I frequently heard them singing, sometimes in the top of a low tree. Their notes are rather loud and quite clear, an interval of a few seconds occurring between each song." Mr Bryant describes the song as follows, the stars representing "a low, short buzz." "*Sweet, sweet* * * * *ear* * * * *sweet, sweet ear* * * * *sweet, sweet ear*," or "*sweet, sweet ear* * * * *sweet, sweet ear*," or "*sweet, sweet ear* * * * *sweet, sweet ear* * * *," all three forms being used by the same individual bird.

A nest found at Comondu on March 25, 1889, by Mr. T. S. Brandegee while in company with Mr. Bryant, "was loosely woven in a clump of 'cat-tails,' . . . and thinly lined with fine fiber and a few horsehairs. It measures externally (as nearly as can be determined from its rough shape) not less than 150 mm. in height by about 115 mm. in diameter. The receptacle is about 55 mm. in depth, with a diameter at the top of 50 mm. The general appearance is almost identical with some song sparrows' nests."

The four eggs contained in this nest are larger than those of "any other North American yellow-throat, measuring 19 × 15; 19.5 × 15; 19.5 × 14.5; 19.5 × 14.5 millimetres. They are white, with shell spots and dots of lilac-gray and a few surface spots and pencillings of black." Four other nests and seven additional eggs taken by Mr. Bryant at this place are essentially similar to the specimens just described. All the nests, apparently, were in cat-tails. The female of one, when started off her eggs, "quietly retreated amongst the rushes and made no demonstration, further than a coarse 'tchep' note."

Icteria virens longicauda (Lawr.).

Long-tailed Chat.

Icteria virens Baird, Rev. Amer. Birds, pt. I. 1865, 229, part (descr. young birds from Cape St. Lucas).

Icteria virens longicauda Belding, Proc. U. S. Nat. Mus., V. 1883, 537 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 312 (Cape Region).

Mr. Frazar met with the Long-tailed Chat only at San José del Cabo, where eight specimens were taken at various dates between September 15 and October 25. Mr. Belding notes it as rare, without mentioning just when or where he found it. Mr. Bryant says that it is common at Comondu "nesting in the bushes of the creek." The Mexicans call it the "'arriero' from the resemblance of its whistle to that made by a mule driver." Mr. Anthony considers it "common in the lower valleys" about San Pedro Martir, but it was "only seen occasionally along the base of the mountain."[1] In summer it ranges as far north as Oregon, breeding rather freely throughout most of California, and in winter it is not uncommon in western Mexico.

Wilsonia pusilla pileolata (Pall.).

Pileolated Warbler.

Myiodioctes pusillus pileolatus Ridgway, Proc. U. S. Nat. Mus, V. 1883, 533, footnote (Agua Escandida; Sierra San Gertrude). Belding, *Ibid.*, VI. 1883, 350 (La Paz and s.).

Sylvania pusilla pileolata Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313 (Cape Region); Zoe, II. 1891, 188 (San José del Cabo).

Mr. Belding gives this species as rare, but states that it was observed at several places in the lowlands about La Paz and southward. Mr. Frazar took only two specimens at La Paz, the first on February 5, the second on March 21. On the Sierra de la Laguna he shot a female on May 4, and a male on May 31. After this none were seen until August 25, when a specimen was taken at San José del Cabo. Here the bird soon became common, its numbers increasing steadily up to the middle of October after which they diminished rapidly. This, with the fact that only one or two were seen at San José del Rancho in December, led Mr. Frazar to conclude that the majority pass to the southward of the Cape before winter sets in. Mr. Bryant "found a few at Comondu in March, before the migration northward had ended." Mr. Anthony states that about the middle of May, 1893, "before we left the pine belt" on San Pedro Martir, "this warbler had become common along the streams; more abundant, however, in the lower valleys during migrations."[2] Aside from this statement there is no present evidence to indicate that the Pileolated Warbler breeds anywhere on the Peninsula, but it is a rather common summer resident of most parts of California and northward, along or near the coast, into Alaska. It migrates southward as far as Costa Rica and Panama.

[1] Zoe, IV. 1893, 245.

[2] *Ibid.*

Setophaga ruticilla (Linn.).

American Redstart.

Setophaga ruticilla Belding, Proc. U. S. Nat. Mus., VI. 1883, 350 (Miraflores; ? La Paz). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313 (Miraflores).

A female Redstart shot by Mr. Belding at Miraflores on February 24, 1883, is the only specimen known to have been taken in Lower California, although Mr. Belding thinks that he saw another at La Paz in March. The species has been found but twice in California, at Hayward's on June 20, 1881, by Mr. W. O. Emerson, and at Marysville Buttes on June 6, 1884, by Mr. Belding. It is probably merely a chance straggler to the Pacific coast of Upper and Lower California, although in British Columbia it is "found throughout the southern portions of the Province, and through the interior as far as Barkerville," but nowhere very commonly.[1]

The winter home of the Redstart includes western Mexico and the whole of Central America with northern South America to about the line of the Equator.

Motacilla ocularis Swinh.

Swinhoe's Wagtail.

Motacilla ocularis Ridgway, Proc. U. S. Nat. Mus., IV. 1882, 414 (crit.; La Paz); VI. 1883, 158 footnote (crit.; S. Lower Calif.). Belding, *Ibid.*, V. 1883, 535 (La Paz). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313 (La Paz).

An "adult specimen in winter plumage" of this east Asiatic species was taken by Mr. Belding at La Paz on "January 9, 1882, during a cold gale from the north. It was found on a drift of sea-weed on the beach." This bird was doubtless a mere waif which had either wandered across the Pacific Ocean or had crossed Bering Strait and thence followed the coastline southward.

M. ocularis has been repeatedly noted at Plover Bay, Siberia, and it probably visits Alaska more or less frequently and regularly, although the only really valid record of its occurrence in any part of North America, other than that furnished by Mr. Belding's specimen, is the mention in the Catalogue of the Birds in the British Museum [2] of a young bird in the collection of that institution which was obtained in "N. W. America" by Captain Kellett and Lieutenant Wood.

[1] Fannin, Check List Birds British Columbia, 1891, 42.

[2] Sharpe, Cat. Birds Brit. Mus., X. 1885, 473.

Anthus pensilvanicus (Lath.).

American Pipit. Titlark.

Anthus ludovicianus Baird, Rev. Amer. Birds, pt. I. 1864, 155 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo); VI. 1883, 347 (Laguna).

Anthus pensilvanicus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313 (San José del Cabo).

Mr. Frazar obtained a large number of Titlarks, all of which are in autumn plumage. Compared with specimens taken at corresponding seasons in the eastern United States they prove to be somewhat grayer above and paler (creamy instead of brownish buff) beneath, with smaller, more sharply defined spots on the breast and lighter, more conspicuous wing bands. These differences, however, are neither pronounced nor constant.

The Titlark is a common winter resident of the Cape Region, where, however, it appears to be chiefly confined to the neighborhood of the sea-coast. Mr. Frazar found it in February near La Paz; on March 13 at Loreto (opposite Carmen Island); and very numerously the following autumn (for the first time on October 4) at San José del Cabo, where, according to Mr. Belding, a few lingered "until about May 3, or later," in the spring of 1882. The latter observer also saw a large flock of birds which he took to be of this species on the Sierra de la Laguna, but none were met with there by Mr. Frazar.

Mr. Bryant collected moulting specimens of the Titlark at Comondu in April, and still further to the northward Mr. Anthony found it "abundant along the coast in winter," but about San Pedro Martir only a few birds were "seen in May, 1889, on the eastern edge of the mountain."[1]

The Titlark is abundant in winter throughout California, but it is not known to breed in this State, nor indeed anywhere near the Pacific coast to the southward of Alaska. It migrates as far south as Guatemala.

Anthus cervinus (Pall.).

Red-throated Pipit.

Anthus cervinus Ridgway, Proc. U. S. Nat. Mus., VI. 1883, 156, 157 (San José del Cabo; descr. summer and winter plumage), 158, footnote (crit.; S. Lower Calif.). Belding, *Ibid.*, 350 (San José del Cabo). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313 (San José del Cabo).

This is another chance straggler to Lower California for which a single adult bird in winter plumage, taken by Mr. Belding at San José del Cabo on January 26, 1883, furnishes the sole record. Besides this specimen there is known

[1] Zoe, IV. 1893, 245.

to be but one other — also in the collection of the National Museum — which was taken in North America, at St. Michael's, Alaska, by Dr. Dall, during the Russian Telegraph Expedition. The species is normally confined to the Old World, where it has an extensive range, being found throughout Europe, in northern Africa, and in Asia from northern Siberia to Japan, China, and India.

Oroscoptes montanus (Towns.).

Sage Thrasher.

Oreoscoptes montanus Belding, Proc. U. S. Nat. Mus., V. 1883, 534 (Cape Region).
Oroscoptes montanus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 313, 314 (Cape Region).

Mr. Belding notes the Sage Thrasher as rare in the Cape Region. He does not state just when or where he found it, but the collection of the National Museum contains two specimens (No. 86,233, ♂, and No. 86,234, ♀), taken by him at La Paz on January 27, 1882. Mr. Frazar is very sure that he saw one on the road between San José del Cabo and Miraflores on November 18, 1887, but, with this possible exception, he did not meet with the species, nor has it been detected further to the northward by Mr. Bryant. Mr. Anthony, however, attests its presence "along the northwest coast in spring under 1,000 feet altitude" (Bryant), and also reports that it "winters in comparative abundance" throughout most of the region about San Fernando.[1]

The birds obtained at La Paz by Mr. Belding are larger and much deeper colored than any of my Texas skins, but they are closely matched by several specimens in my collection from Riverside, California.

The Sage Thrasher ranges northward, on or near the Pacific coast, to British Columbia, but does not appear to be common at many places west of the Sierras. I have several specimens from the city of Chihuahua, but none from the western part of Mexico.

Mimus polyglottos leucopterus (Vigors).

Western Mockingbird.

Mimus polyglottus (not *Turdus polyglottos* Linnaeus) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 303 (crit.; Cape St. Lucas). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1879, 36, part (crit.; Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 534 (Cape Region); VI. 1883, 345 (Cape Region).

Mimus polyglottos (not *Turdus polyglottos* Linnaeus) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 314 (Cape Region).

Mimus polyglottos leucopterus Mearns, Auk, XIX. 1902, 70–72 (orig. descr.; characters drawn from Lower California and other material).

[1] Anthony, Auk, XII. 1895, 142.

As Dr. Mearns has recently pointed out, *Mimus polyglottos leucopterus* is an excellent subspecies, differing very appreciably, as well as constantly, from true *polyglottos* in having the general coloring of the upper parts less grayish (more drab); the under parts whiter posteriorly, and more strongly tinged with clay color on the throat and breast; the white markings on the wings much more extended and conspicuous; the general size larger, but the tail relatively shorter. In respect to all these characters the numerous specimens obtained in the Cape Region by Mr. Frazar are apparently typical of *leucopterus*. Professor Baird thought that the birds of this region have shorter tails than those found in California, but I find the reverse to be the rule, although the difference is neither marked nor constant.

The Western Mockingbird occurs throughout Lower California, and is probably resident wherever found. Mr. Belding characterizes it as "abundant" in the Cape Region. Mr. Frazar's experience does not corroborate this, for he says: "While most numerously represented at San José del Cabo, it cannot be called a common bird either there or about La Paz, and at Triunfo I found it rather rare. It is very generally distributed over the low country, but it was not seen by me at all on the higher mountains."

Mr. Bryant affirms that this Mockingbird is "everywhere common" on the portions of the Peninsula which he visited. It is not known to occur north of California, and in that State is found regularly and commonly only in the central and southern portions. It inhabits nearly the whole of Mexico, excepting the higher mountain regions, as far south as the Isthmus of Tehuantepec.

Toxostoma cinereum (Xantus).

St. Lucas Thrasher.

Harporhynchus cinereus Xantus, Proc. Acad. Nat. Sci. Phila., 1859, 298 (orig. descr.; type from Cape St. Lucas). Baird, *Ibid.*, 301 (Cape St. Lucas), 303 (crit.; Cape St. Lucas); Rev. Amer. Birds, pt. I. 1864, 46, 47 (descr.; Cape St. Lucas). Sclater, Cat. Amer. Birds, 1862, 8 (Lower Calif.). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, pl. 1 (descr.). Cooper, Orn. Cal., 1870, 19 (descr.; figures head; Cape St. Lucas). Coues, Check List, 1873, 7, no. 12; 2d ed., 1882, 25, no. 22; Birds Col. Valley, 1878, 68, 69, fig. 11 (descr.; crit.). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 40, 41, pl. 4, fig. 2 (descr. bird, nest, eggs, and habits; crit.). Sharpe, Cat. Birds Brit. Mus., VI. 1881, 355, 356 (descr.; La Paz). Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 12, 60, 74, no. 14. Belding, Proc. U. S. Nat. Mus., VI. 1883, 345 (Cape Region). A. O. U., Check List, 1886, 324, no. 709. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 314 (Cape Region; Comondu to San Quintin). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 136 (Cape St. Lucas). Allen, Auk, X. 1893, 142 (tropical type).

[*Mimus*] *cinereus* Gray, Hand-list, I. 1869, 263, no. 3,850.

[*Harporhynchus*] *cinereus* Coues, Key N. Amer. Birds, 1872, 75 (descr.; Cape St. Lucas). Dubois, Synop. Avium, fasc. VI. 1901, 417 (Basse-Californie).

H.[*arporhynchus*] *cinereus* Coues, Amer. Nat., VII. 1873, 327, 330, 331, fig. 70 (descr.; crit.); Key N. Amer. Birds, 4th ed., 1894, 253 (descr.; Lower Calif.). Belding, Proc. U. S. Nat. Mus., VI. 1883, 344 (Lower Calif.). Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 544 (descr.; Lower Calif.).

Hyporhynchus cinereus (err. typ.) Jasper, Birds. N. Amer. 1878, 151, pl. 103, fig. 6 (Cape St. Lucas).

Methriopterus cinereus Belding, Proc. U. S. Nat. Mus., V. 1883, 534 (Cape Region). Ridgway, *Ibid.*, VI. 1883, 158, footnote (crit.; S. Lower Calif.).

Toxostoma cinerea Richmond, Auk, XIX. 1902, 89 (synonymy).

Toxostoma cinereum A. O. U. Comm., Auk, XIX. 1902, 328, no. 709.

Juvenal plumage: — (Female, No. 14,572, collection of William Brewster, San José del Rancho, July 6, 1887). Above ash brown strongly tinged with rusty, the hind back, rump, and upper tail coverts nearly pure rusty; wings and tail as in the adult, but with all the tail feathers tipped with rusty, the secondaries and greater and middle wing coverts tipped and edged with rusty fulvous, the primaries with rusty white; beneath rusty white, the rusty tinge deepest on the abdomen, crissum, and under tail coverts, the entire under parts, including the chin and abdomen — but not the middle of the throat, anal region, and under tail coverts — thickly spotted with clove brown, these spots largest across the breast, but everywhere much narrower and more numerous than in old birds.

Sexual variation: — The sexes do not seem to differ in size, color, or markings.

Seasonal variations: — Autumn birds are much more ashy above and buffy beneath than spring specimens. In some of the former, the wing coverts are tipped with rusty, and the flanks, abdomen, crissum, and under tail coverts with light rusty ochraceous. As the season advances, these colors gradually fade, until by April the upper parts become dull ashy brown, while the abdomen and crissum are only faintly tinged with rusty. In June the plumage is excessively worn and faded, and the under parts are essentially uniform soiled white.

Individual variations: — There is much diversity with respect to the spotting of the under parts. In the lighter colored birds the spots are small, rounded, and confined to the breast and the sides of the throat and body. The darker ones have the entire under parts — excepting the under tail coverts, crissum, anal region, and a small space on the middle of the throat and abdomen, which are always plain — thickly and coarsely marked with deltoid spots which, on the breast, are sometimes so large and numerous as to be almost confluent. In especially dark specimens the jugulum is usually densely but always finely spotted, and there are often a few fine markings on the chin. The whitish spots on the tail are ordinarily broad and conspicuous on the inner webs of the outer three feathers, extending .50 to .65 of an inch back from their tips, but in a few specimens they are restricted and, indeed, almost obsolete, being

merely indicated by small spaces of brownish or rusty white, confined to the extreme ends of the feathers.

The bill of this species is subject to considerable variation in size and proportions, but its shape is fairly uniform.

My series furnishes no evidence indicating that this Thrasher ever grades into *T. bendirei*.

The St. Lucas Thrasher is confined to Lower California. It is resident and rather generally distributed in the Cape Region, where, however, it does not seem to occur at elevations much exceeding 3,000 feet. Mr. Frazar found it common in the neighborhood of La Paz and San José del Rancho, somewhat less numerous at Triunfo, and "very scarce" at San José del Cabo.

Mr. Bryant says that he met with it "throughout the overland route from Comondu to San Quintin," but this was before *T. c. mearnsi* had been described by Mr. Anthony, who states that his bird (which is decidedly darker and more rusty colored than true *cinereum*) "is quite common about San Quintin [the type locality], and in all suitable places as far south as I have collected." From this we may infer that all the more northern portions of the general range attributed to *cinereum* by Mr. Bryant are occupied by *mearnsi*, but as to just where the two birds meet and intergrade we are left in complete ignorance.

Dr. Brewer states that Xantus found St. Lucas Thrashers with full-fledged young as early as April 4, the date of his arrival at Cape St. Lucas, and that they "continued to breed until the middle of July." The nests which he took were "flat structures, having only a very slight depression in or near their centre." They were built in "low trees, shrubs, and most usually, cactus plants, and in no instance at a greater elevation from the ground than four feet. . . . The eggs vary somewhat in their ground color, but exhibit only slight variations in size or shape. Their greatest length is 1.13 inches, and their average 1.12 inches. Their mean breadth is .77 inch, and their maximum .79 inch. The ground color is a greenish-white, profusely marked with spots of mingled purple and brown. In others the ground color is a bluish-green. In some specimens the spots are of a yellowish-brown, and in some the markings are much lighter."

Three eggs in my collection, constituting a set taken at Cape St. Lucas on May 30, 1896, by Messrs. Coolidge and Miller, measure respectively: 1.04 × .79, 1.06 × .81, and 1.07 × .80. They are dull bluish white, with numerous and very generally distributed markings of pale lavender and light reddish brown.

Heleodytes brunneicapillus affinis (Xantus).

St. Lucas Cactus Wren.

Campylorhynchus affinis Xantus, Proc. Acad. Nat. Sci. Phila., 1859, 298 (orig. descr.; type from Cape St. Lucas). Baird, *Ibid.*, 301 (Cape St. Lucas), 303, 304 (crit.; Cape St. Lucas); Rev. Amer. Birds, pt. I. 1864, 98, 100, 101 (descr.;

[1] Auk, XII. 1895, 52, 53.

crit.; Cape St. Lucas). Sclater, Cat. Amer. Birds, 1862, 17 (Lower Calif.). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, pl. 4 (quotes orig. descr.). Cooper, Orn. Cal., 1870, 62, 63 (descr.; crit.; Cape St. Lucas). Coues, Check List, 1873, 13, no. 44; 2d ed., 1882, 30, no. 64. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 133, 134, pl. 8, fig. 6 (descr. bird, nest, and eggs; crit.; Cape St. Lucas). Jasper, Birds N. Amer., 1878, 151, pl. 103, fig. 8 (Cape St. Lucas). Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 14, 61, 74, no. 57; Proc. U. S. Nat. Mus., VI. 1883, 158, footnote (crit.; S. Lower Calif.). Belding, *Ibid.*, V. 1883, 535 (Cape Region); VI. 1883, 345 (Cape Region). A. O. U., Check List, 1886, 325, no. 714. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 315 (Cape Region; San Quintin and s.); Zoe, II. 1891, 188 (San José del Cabo). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 136 (Cape St. Lucas). Allen, Auk, X. 1893, 142 (tropical type). Anthony, Zoe, IV. 1893, 245 (San Pedro Martir).

[*Campylorhynchus*] *affinis* Gray, Hand-list, I. 1869, 192, no. 2,652. Coues, Key N. Amer. Birds, 1872, 85 (descr.; Cape St. Lucas).

C.[*ampylorhynchus*] *affinis* Coues, Birds Col. Valley, 1878, 157 (crit.); Key N. Amer. Birds, 4th ed., 1894, 275 (descr.; Lower Calif.). Belding, Proc. U. S. Nat. Mus., VI. 1883, 344 (Lower Calif.).

Campylorhynchus brunneicapillus (not of Lafresnaye) Sharpe, Cat. Birds Brit. Mus., VI. 1881, 197, 198 (descr.; La Paz).

Heleodytes affinis A. O. U. Comm., Auk, XI. 1894, 48, no. 714. Anthony, *Ibid.*, 210–214 (crit.); XII. 1895, 280 (status).

H.[*eleodytes*] *affinis* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 547 (s. portion of Lower Calif.).

Heleodytes brunneicapillus affinis A. O. U. Comm., Auk, XIV. 1897, 131, no. 713 b.

[*Campylorhynchus*] *brunneicapillus* Dubois, Synop. Avium, fasc. VI. 1901, 420, part (Basse-Californie).

Sexual variations: — The sexes apparently differ only in respect to size, the females being usually, but not invariably, smaller than the males.

Seasonal variations: — Young in juvenal plumage differ from old birds in breeding plumage only in having the crown of a darker, duller brown (almost slaty brown in some specimens); the light markings of the back rusty white and broader, on many of the feathers taking the form of deltoid spots; the light markings of the wings, including those of the outer primaries (but not of the tail), strongly rusty; the spotting of the under parts finer and somewhat fainter.

Young (and perhaps old birds also) in autumn differ from spring adults and young in juvenal plumage in having the light streaks of the back broader and whiter; the flanks, abdomen, anal region, and crissum bright cinnamon or ochraceous buff, instead of rusty white.

Individual variation: — Baird remarked[1] "a tendency to a whitish spotting in the ends of the feathers of the cap," which he regarded as characteristic of immature birds, but in the large series before me it occurs quite as fre-

[1] Rev. Amer. Birds, pt. I. 1864, 100.

quently with apparently mature specimens taken in spring as with young in autumn, while it is not present in any of the young in juvenal plumage. Moreover, these crown spots are not "whitish" in any of my specimens, but always more or less rusty and often deep golden brown.

In respect to the size, shape, and distribution of the dark markings of the under parts, there is quite as much variation as in most conspicuously spotted birds. Some of the more heavily marked specimens, especially the autumnal ones with rich buffy abdomens and flanks, resemble the lighter colored examples of *brunneicapillus* very closely, but the difference in the tail markings of the two species is so pronounced and constant that it can be relied upon to separate birds of any age or plumage. I have had no opportunity, however, of testing the characters by which the form *bryanti* is said to be distinguishable from *affinis*.

In the Cape Region proper the St. Lucas Cactus Wren is everywhere a common resident excepting on the higher mountains, where it appears to be wholly wanting. Its favorite haunts are the arid, cactus-grown plains near the coast and the almost equally barren and waterless foot-hills, but at San José del Cabo Mr. Frazar found it abundant in gardens and among shrubbery near or even directly over water. At this place birds were seen carrying sticks in their bills, apparently for the purpose of nest-building, as late as October 18, and the same thing was observed at Santiago about the middle of November. The sexual organs of the specimens killed at this time did not indicate, however, that any of them were breeding or about to breed.

Until somewhat recently the St. Lucas Wren was supposed to be confined to the Cape Region, but in 1888 and 1889 Mr. Bryant ascertained that it is also very generally distributed throughout the central portion of the Peninsula. Indeed he has reported its occurrence as far to the northward as San Quintin, but the birds of that locality have been since referred by Mr. Anthony to the closely allied *H. b. bryanti*, which is said to be easily distinguishable from both *brunneicapillus* and *affinis* by the exceptionally heavy dark markings on its under parts, but which, in other respects, is "practically intermediate" between these forms.[1] Mr. Anthony thinks that *bryanti* will be found to grade into *affinis* "at a point at no great distance south of San Fernando,"[2] and his material apparently establishes its complete intergradation with *brunneicapillus* in the more eastern parts of southern California.

Salpinctes obsoletus (Say).

Rock Wren.

Salpinctes obsoletus Baird, Rev. Amer. Birds, pt. I. 1864, 110 (crit.; Cape St. Lucas). Salvin and Godman, Biol. Centr.-Amer., Aves, I. 1880, 71 (Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 315 (Cape Region).

[1] Anthony, XI. 1894, 212.

[2] Auk, XII. 1895, 280.

Mr. Belding considers this species "not rare" in the Cape Region, but Mr. Frazar saw only a single pair during his stay there. They were in the graveyard at La Paz, and when first observed (on March 19) were engaged in building a nest. Three days later the male was secured. It does not differ in any way from examples in my collection from Colorado.

Mr. Bryant found a few Rock Wrens "on Santa Margarita and Magdalena Islands, and at various localities northward," while Mr. Anthony states that the species is "not uncommon in winter" at San Fernando,[1] and that at San Pedro Martir he found it nesting, in a single instance, "at 8500 feet; more common on the lower slopes."[2]

It occurs more or less numerously throughout California and northward into British Columbia, and is common and very generally distributed in central and western Mexico, where it breeds at every altitude from the crest of the Sierra Madre range to the low country near the Pacific coast. It ranges still further southward, to Guatemala and San Salvador.

Catherpes mexicanus punctulatus Ridgw.

Dotted Cañon Wren.

Catherpes mexicanus conspersus (not of Ridgway) Belding, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region); VI. 1883, 347 (Victoria Mts.).

Catherpes mexicanus punctulatus Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 315 (Cape Region).

With this Wren, also, Mr. Belding and Mr. Frazar seem to have had somewhat diverse experiences. The former notes it as "moderately common throughout all altitudes," whereas the latter found it only on the Sierra de la Laguna. "There were a few here on my arrival (April 26) and their numbers increased steadily up to the date of my departure (June 9), but even then they had not become really common. I usually found them in cañons, but sometimes on hillsides where there were large boulders." There can be little doubt that they breed on this mountain, although Mr. Frazar obtained no definite proof that such is the case. Mr. Bryant secured "a male and four fledged young at San Sebastian," on April 28, 1889, and speaks of hearing old birds "far up the sides of the rocky walls that inclose Comondu." Mr. Anthony reports that the species was "not uncommon in several places on San Pedro" Martir in late April and early May, 1893,[3] and that he has also seen it in small numbers near San Fernando.[4] Upon comparing Mr. Frazar's specimens with the type of *C. m. punctulatus*, I find that they agree with it in all essential respects.

The Dotted Cañon Wren is rather generally distributed throughout California, but is not known to range further northward. It is also found in Arizona and New Mexico, and southward into Sonora and Chihuahua, Mexico.

[1] Auk, XII. 1895, 143.
[2] Zoe, IV. 1893, 245.
[3] Zoe, IV. 1893, 245.
[4] Auk, XII. 1895, 143.

Troglodytes aëdon aztecus Baird.

Western House Wren.

Troglodytes aëdon parkmanni (not *Troglodytes parkmanii* Audubon) Belding, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region).

Troglodytes aëdon parkmanii (not *Troglodytes parkmanii* Audubon) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 316 (La Paz).

Parkman's Wren is included without comment by Mr. Belding in his list of birds "common to most or all of the localities where collections were made" "near the southern extremity of the Peninsula." Mr. Bryant also gives it as a bird of Lower California, but apparently solely on the authority of Mr. Belding, who, he states, "found it to be rare on Cerros Island, and collected a specimen at La Paz." Mr. Anthony mentions only *T. a. aztecus*, which, he says, was "abundant in the pines" on San Pedro Martir in late April and early May, 1893.[1]

Mr. Frazar's collection contains five House Wrens, of which two were taken at San José del Cabo on September 29 and October 17, respectively, one at Triunfo on December 9, and two at San José del Rancho on December 20 and 21, respectively. All of these birds seem to me to be referable to *aztecus*. They are certainly quite as ashy as average examples of that form, although in respect to the nearly obsolete character of the barring on the upper parts, they agree rather better with *parkmanii*.

From this it will appear that the status of the House Wrens which occur in the Cape Region in autumn and winter is still open to doubt. It is quite possible, of course, that some of them are really examples of *parkmanii* which migrate southward from California, but more probable, in my opinion, that most if not all of them are representatives (not quite typical, perhaps) of *aztecus*, which pass their summers at San Pedro Martir and other elevated places in the more northern portions of the Peninsula.

Cistothorus palustris paludicola Baird.

Tulé Wren.

(?) *Telmatodytes palustris paludicola* Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo).

(?) *Cistothorus palustris paludicola* Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 316 (San José del Cabo).

Mr. Belding gives this Marsh Wren as "rare" in his list of species found at San José del Cabo from April 1 to May 17, 1882. The birds which he saw on this occasion were probably only belated stragglers from the hordes which

[1] Zoe, IV. 1893, 245.

must regularly winter at this place, for in the autumn of 1887 Mr. Frazar found Tulé Wrens in immense numbers both here and at Santiago. They evidently came from the north, the vanguard of the flight arriving on September 21 (a single bird was seen on the 14th), but the bulk not until October 19, after which their numbers increased slowly but steadily up to November 4, when they simply swarmed in the patches of tall rushes and tules along the river. They were particularly abundant at Santiago, on November 22. A very few were seen at San José del Rancho in December, but none about La Paz in January, February, or March. To the northward Mr. Bryant has apparently met with only two specimens, both on Santa Margarita Island.

C. p. paludicola is very common, coastwise, in California wherever it can find suitable haunts. It is resident in the southern and central parts of the State and it winters sparingly as far north as Washington and Oregon, while its breeding range extends into British Columbia. It is said to migrate as far south as Guatemala.

Cistothorus palustris plesius Oberh.

Western Marsh Wren.

(?) *Telmatodytes palustris paludicola* (not *Cistothorus palustris paludicola* Baird) Belding, Proc. U. S. Nat. Mus., V. 1883, 546 (San José del Cabo).

(?) *Cistothorus palustris paludicola* (not of Baird) Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 316 (San José del Cabo).

Cistothorus palustris plesius Oberholser, Auk, XIV. 1897, 186–193 (orig. descr.; types from New Mexico and Utah; typical examples from Miraflores).

Mr. Oberholser says[1] that "very typical specimens of *plesius* have been taken at Miraflores, Lower California," but at what season he does not state. The large series of Marsh Wrens collected by Mr. Frazar at San José del Cabo includes representatives of this race and *paludicola* in about equal numbers. Which of the two birds — if either — is resident in the Cape Region I have no means of judging. Nor have I seen enough breeding specimens of either to form any definite opinion as to the value and constancy of the characters by which they have been separated. I may say in this connection, however, that I have a number of skins apparently typical of *plesius* which were obtained by Mr. L. M. Turner late in April, at Seattle, Washington, and hence practically on the Pacific coast, where, if I understand the case correctly, *paludicola* should be the breeding form, for *plesius*, according to Mr. Oberholser, breeds only in the interior.

[1] Auk, XIV. 1897, 192.

Sitta carolinensis lagunae Brewst.

St. Lucas Nuthatch.

[*Sitta carolinensis*] var. *aculeata* Coues, Key N. Amer. Birds, 1872, 83, part.

Sitta carolinensis, var. *aculeata* Coues, Check List, 1873, 11, no. 38 a, part.

Sitta carolinensis aculeata (not of Allen) Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 14, no. 51 a, part. Coues, Check List, 2d ed., 1882, 29, no. 58, part. Belding, Proc. U. S. Nat. Mus., VI. 1883, 347 (Victoria Mts.). A. O. U., Check List, 1886, 331, no. 727 a, part. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 316 (Victoria Mts.).

Sitta carolinensis lagunae Brewster, Auk, VIII. 1891, 149 (orig. descr.; types from Sierra de la Laguna). Bryant, Zoe, II. 1891, 198 (Victoria Mts.)

S.[itta] carolinensis aculeata Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 559, part.

[*Sitta carolinensis*] var. *lagunae* Dubois, Synop. Avium, fasc. IX. 1901, 681 (Basse-Californie).

Although this race has not been recognized by the A. O. U. Committee, I continue to regard it as a perfectly good subspecies. As I stated in connection with my original description it differs very constantly from *aculeata* of northern Mexico and the western United States in having decidedly shorter wings, slightly shorter tail, and much narrower, blackish, terminal markings on the outer tail feathers. These differences are not, perhaps, very conspicuous, but they seem to me to constitute better as well as obviously more readily available diagnostic characters than the slight dissimilarities in respect to color toïes which alone serve to distinguish certain birds that have been accepted by the Committee as subspecifically distinct.

The St. Lucas Nuthatch is probably confined to the higher mountains south of La Paz, where it was first detected by Mr. Belding in 1883. To Mr. Frazar, however, is due the credit of collecting a sufficient series of specimens to bring out the slight but nevertheless very tangible differences which distinguish it from *aculeata*, to which Mr. Belding very naturally referred it. Mr. Frazar met with it only on the Sierra de la Laguna, where, at all seasons, it is a rather common bird inhabiting the pine forests at high elevations. Specimens shot early in May were incubating. It is possible that the White-bellied Nuthatches which Mr. Anthony found "rather rare but well distributed in the pines" on San Pedro Martir [1] may also belong to this form, but they are more likely to prove true *aculeata*.

[1] Zoe, IV. 1893, 246.

Parus inornatus cineraceus Ridgw.

Ashy Titmouse.

Lophophanes inornatus Coues, Check List, 1873, 9, no. 28, part; 2d ed., 1882, 28, no. 41, part. Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 13, no. 38, part.

Lophophanes inornatus cineraceus Ridgway, Proc. U. S. Nat. Mus., VI. 1883, 154, 155 (orig. descr.; type from Laguna), 158, footnote (crit.; S. Lower Calif.), 347 (measurements). Belding, *Ibid.* (Victoria Mts.). Coues, Key N. Amer. Birds, 4th ed., 1894, 866 (descr.; Lower Calif.).

Parus inornatus cineraceus Ridgway, *Loc. cit.*, VIII. 1885, 354. A. O. U., Check List, 1886, 333, no. 733 b. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 317 (Victoria Mts.); Zoe, II. 1891, 198 (Victoria Mts.).

P.[arus] inornatus cineraceus Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 561 (descr.; s. portion of Lower Calif.).

[*Lophophanes inornatus*] var. *cineracea* Dubois, Synop. Avium, fasc. VII. 1901, 465 (Basse-Californie).

Mr. Ridgway states that this form differs from its nearest ally, *P. i. griseus*, in having generally grayer colors, paler coloring beneath, and a smaller bill. The bill of the type is described as *black*, and, as a second specimen afterwards taken by Mr. Belding agreed "exactly with the type," it is fair to assume that its bill was also black.

In my series of thirty-four examples, the clear grayish white of the under parts is perfectly constant and serves at once to distinguish the Lower California bird from *griseus*, which seems to be always dingy or smoky gray beneath. The color of the upper parts varies considerably with season, and is decidedly ashier in autumn than in spring; with several of my specimens it matches perfectly that of *griseus*, but with the majority it is slightly grayer. As far as the bills of the two birds are concerned, I am unable to make out any differences whatever, either of color or size. Without a single exception, the bills of my representatives of *cineraceus* are dark horn colored, precisely as in *griseus*, and they do not average smaller.

Several of my examples of *cineraceus* are marked in a curious manner with pale tawny brown, almost fawn color. This is nearly uniform in shade in the different birds, but is irregularly disposed, although always confined to the upper parts. In one specimen it forms a broad terminal band on the tail; in three others, a slight tipping on the crest, while in a fourth almost the entire crest is bright fawn color, in marked contrast with the ashy-gray crown and nape. The bird last mentioned has the greater wing coverts tinged with tawny, which forms a rather conspicuous light bar on each wing. It also shows an ill-defined light band across the back. All the specimens thus marked are adults, taken in May and June, and, in all, the plumage is worn and faded. It is possible that the peculiar coloring just described is caused by excessive

fading, but I am inclined to regard it as analogous to the similar light markings found in *Melanerpes angustifrons* and certain other Woodpeckers.

The Ashy Titmouse appears to be strictly confined to the Cape Region, the bird found at San Pedro Martir, in the northern part of the Peninsula, being the closely related *P. i. griseus*, according to Mr. Bryant, whose failure to detect any representative of the *inornatus* group in the intermediate region makes it nearly certain that the habitat of *cineraceus* is quite cut off from that of its ally just mentioned. Indeed, its range appears to correspond closely, if not exactly, with that of the St. Lucas Nuthatch. Like the latter, it is a bird of the pine forests which cover portions of the summit and upper slopes of the high mountains near the southern extremity of the Peninsula. Here, according to Mr. Belding, it is "common from 3,000 feet altitude upward." On the Sierra de la Laguna Mr. Frazar found it quite as numerous in December as in May and June. None of the specimens killed at the latter season showed any indications of being about to breed, and the eggs, like those of many other birds which inhabit these mountains, are probably not laid much before midsummer.

Psaltriparus grindae Ridgw.

Grinda's Bush-Tit.

[*Psaltriparus*] *minimus* Coues, Key N. Amer. Birds, 1872, 81, 82, part (Pacif. coast).

Psaltriparus minimus Coues, Check List, 1873, 11, no. 35, part; 2d ed., 1882, 29, no. 53, part. Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 14, no. 47, part.

Psaltriparus grindae Ridgway, Proc. U. S. Nat. Mus., VI. 1883, 155 (orig. descr.; type from Laguna), 158, footnote (crit.; S. Lower Calif.), 347 (measurements); Proc. Biol. Soc. Wash., II. 1884, 96 (a correction). Belding, Proc. U. S. Nat. Mus., VI. 1883, 347 (Victoria Mts.).

Psaltriparus minimus grindae Ridgway, Proc. U. S. Nat. Mus., VIII. 1885, 354. A. O. U., Check List, 1886, 337, no. 743 b. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 317 (San Francisco and Victoria Mts.); Zoe, II. 1891, 198 (Victoria Mts.). Coues, Key N. Amer. Birds, 4th ed., 1894, 867 (descr.; Lower Calif.).

P.[*saltriparus*] *minimus grindae* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 565 (descr; s. portion of Lower Calif.).

[*Psaltriparus*] *grindae* Dubois, Synop. Avium, fasc. VII. 1901, 466 (Basse-Californie).

The characters claimed for this form by Mr. Ridgway are so constantly presented in the large series obtained by Mr. Frazar that I believe the bird to be a good species. The type, taken on February 2, was evidently in nuptial plumage. I can now add descriptions of the juvenal and first winter plumages.

Juvenal plumage: — (Male, No. 14,822, San José del Rancho, July 21, 1887). Differing from the adult in being ashier beneath, with a decided purplish

tinge on the sides; the back paler bluish, the crown light purplish brown; the outer tail feathers with their outer webs ashy white to the shaft; the secondaries and wing coverts edged and tipped with grayish or rusty white.

First winter plumage: — (Male, No. 14,789, Sierra de la Laguna, November 28, 1887). Similar to the young just described, but with the crown deep purplish brown; the back darker or more slaty than in the adult; the wings and tail more bluish; the inner secondaries tipped with ashy white; the outer tail feathers with exceedingly narrow light margins on their outer webs.

A moulting specimen (No. 14,828), taken on July 28, 1887, has the forehead covered with fresh feathers of the same deep purplish brown as No. 14,789, while the worn and faded feathers on the occiput are those of the nuptial dress, showing that the adult assumes a distinctive autumn plumage. Among the spring adults in my series, however, there is much individual variation in respect to the color of the crown which varies from very pale isabella to purplish brown nearly as deep and rich as that of autumnal birds.

Like the Ashy Titmouse, Grinda's Bush-Tit is confined to the mountains south of La Paz. It is represented in the northern portions of the Peninsula "from El Rosario northward" (Bryant) by the closely-allied form, *P. minimus californicus*, the two being separated geographically by a region over four hundred miles in width, where no member of the genus is known to occur. Mr. Belding (who discovered both birds in 1883) draws no distinction between the respective vertical ranges of *P. i. cineraceus* and *P. grindæ*, but Mr. Frazar found that the latter has much the more extended *vertical* distribution of the two, occurring almost as numerously about San José del Rancho as on the Sierra de la Laguna. It is a sedentary species, of which each individual bird probably spends its entire life within a very limited area, for Mr. Frazar noticed no marked seasonal variations in the number of its representatives at any of the localities which he visited.

A nest found on May 24 in the top of a small pine about eight feet above the ground, on the Sierra de la Laguna, is similar in shape to the nests of *P. m. californicus* and *P. plumbeus*. It is nine inches long, with a diameter varying from two to two and one half inches. The entrance hole is in one side near the top. The walls are composed of small, dry leaves, fern-down, catkins, spiders' cocoons, yellowish usnea and grayish lichens, all these materials being felted into a thick, tenacious fabric of a generally mixed brown and grayish color. There were no eggs, the nest being not quite finished when taken.

Auriparus flaviceps lamprocephalus Oberh.[1]

Baird's Verdin.

Paroides flaviceps (not *Aegithalus flaviceps* Sundevall) Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 304 (crit.; Cape St. Lucas).

[1] Most of the differences which distinguish this subspecies from true *flaviceps* were originally pointed out by Professor Baird (Rev. Amer. Birds, pt. I. 1864, 85, 86).

Auriparus flaviceps (not *Aegithalus flaviceps* SUNDEVALL) BAIRD, Rev. Amer. Birds, pt. I. 1864, 85, 86, part (crit.; Cape St. Lucas). COOPER, Orn. Cal., 1870, 51, part (Cape St. Lucas). COUES, Check List, 1873, 11, no. 37, part; 2d ed., 1882, 29, no. 56, part. BAIRD, BREWER, and RIDGWAY, Hist. N. Amer. Birds, I. 1874, 112, 113, part (breeding at Cape St. Lucas; nesting habits). SALVIN and GODMAN, Biol. Centr.-Amer., Aves, I. 1880, 59, part (breeding at Cape St. Lucas; descr. male from Cape St. Lucas). RIDGWAY, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 14, no. 50, part. BELDING, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region), 547 (breeding at La Paz); VI. 1883, 345 (Cape Region). A. O. U., Check List, 1886, 338, no. 746, part. BRYANT, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 318 (throughout Peninsula). TOWNSEND, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas).

[*Auriparus*] *flaviceps* COUES, Key N. Amer. Birds, 1872, 82, part (Lower Calif.).

A.[*uriparus*] *flaviceps* COUES, Key N. Amer. Birds, 4th ed., 1894, 269, part (Lower Calif.). RIDGWAY, Man. N. Amer. Birds, 2d ed., 1896, 565 part (Lower Calif.).

Auriparus flaviceps lamprocephalus OBERHOLSER, Auk, XIV. 1897, 390–394 (orig. descr.; type from Cape St. Lucas). A. O. U. COMM., Auk, XVI. 1899, 126, no. 746 a.

[*Auriparus flaviceps*] var. *lamprocephala* DUBOIS, Synop. Avium, fasc. VII. 1901, 468 (Basse-Californie).

Mr. Bryant says that this Verdin is "a common species throughout the peninsula," but he adds that Mr. Belding doubts if it occurs "north of lat. 32°, unless on the eastern side." Mr. Anthony reports it as "quite common in all of the country south of San Quintin," but he does not mention meeting with it anywhere to the northward of that place.[1] These statements were made, of course, before the subspecies *lamprocephalus* had been separated by Mr. Oberholser, who gives its habitat as "California inferior australis," adding "no specimens from the upper half of Lower California have been examined." Mr. Bryant, however, in a previous paper,[2] in which he proposed to distinguish the same bird under a name which has been since shown by Mr. Oberholser to be untenable, refers to it apparently all the specimens of the Verdin which he had "collected in Lower California," as well as others from Los Angeles and San Diego counties, California.

Mr. Frazar found Baird's Verdin abundant everywhere in the Cape Region except on the Sierra de la Laguna, where none were met with. It was breeding at La Paz in March, at Triunfo in April, and apparently at San José del Cabo in *November*, for on the third of that month Mr. Frazar found two nests about half completed on which the birds were busily at work. A week later another Verdin was noticed carrying feathers in its bill, doubtless for the lining of its nest, and still later (on November 17) a fourth was observed at Santiago collecting building material.

[1] Auk, XII. 1895, 143.

[2] Zoe, I. 1890, 149.

Regulus calendula (Linn.).

Ruby-crowned Kinglet.

Regulus calendula Belding, Proc. U. S. Nat. Mus., VI. 1883, 347 (Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 318 (Victoria Mts.); Zoe, II. 1891, 198 (Victoria Mts.).

Although this species has thus far defied the "hair-splitters" with some success, it does not seem to be entirely free from geographical variation. At least in the series before me it is possible to make out three forms, of which that from the eastern United States is the smallest and most richly colored, that from the Middle Province the largest and grayest, that from the Northwest coast intermediate in size between the other two, and, like many birds from this region, very deeply colored.[1] The differences between extreme, or what may be called typical, examples of these forms are obvious and easily made out, but they do not seem to be sufficiently constant in the birds from any one region to be worth special recognition. It should be mentioned, however, that most of my specimens were taken either during migration or in their winter quarters, and the examination of good series of breeding birds would perhaps lead me to a different conclusion from that just expressed.

The five specimens collected in the Cape Region by Mr. Frazar were all shot on the Sierra de la Laguna. They belong to the large gray form above mentioned.

Mr. Belding names the Ruby-crowned Kinglet in his list of mountain birds as "moderately common; from 3,000 feet altitude upward." Mr. Frazar found it only on the Sierra de la Laguna, where he shot a single specimen, a female, on April 27, and saw a number during the last week of November and the first two days of December. Mr. Bryant does not mention meeting it, but states that "on San Pedro Martir Mr. Anthony saw it up to 11,000 feet altitude, and down to the coast in winter and spring," as well as "in the pines the last of April, at 8,500 feet elevation." It is not probable that it breeds in Lower California even at high altitudes.

The Ruby-crowned Kinglet is merely a winter visitor to the coast districts of California, but it breeds in the Sierras from latitude 38° northward to Alaska. It is common in western Mexico in winter, and goes as far south as Guatemala.

[1] This is probably the form which Dr. Palmer has recently described (Auk, XIV. 1897, 399), from Sitka, Alaska, under the name *R. c. grinnelli*. According to Dr. Palmer, however, the Sitka bird is smaller, instead of larger, than true *calendula*.

Polioptila caerulea obscura Ridgw.

Western Gnatcatcher.

Polioptila caerulea (not *Motacilla caerulea* Linnaeus) Baird, Rev. Amer. Birds, pt. I. 1864, 74, 75, part (crit.; Cape St. Lucas). Belding, Proc. U. S. Nat. Mus., V. 1883, 534 (Cape Region); VI. 1883, 346, 347 (crit.; Victoria Mts.). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 318 (Cape Region; Victoria Mts.).

P.[*olioptila*] *caerulea obscura* Ridgway, Proc. U. S. Nat. Mus., V. 1883, 534, 535 (provis. name based on specimens from San José, Lower California, California, Arizona, etc.; measurements of bird from San José, etc.).

Although the characters which distinguish the Western Gnatcatcher from *P. caerulea* are rather slight, they are well maintained in the series of over thirty specimens before me. The most constant difference is that relating to the extent of the white on the outer tail feathers, *P. c. obscura* having the white much more restricted than *P. caerulea*.

The Western Gnatcatcher is a rather common resident of the Cape Region, where it appears to be indifferent to conditions of mean temperature or environment, for it occurs nearly everywhere from the seacoast (La Paz and San José del Cabo) to the summits of the highest mountains (Sierra de la Laguna). Mr. Frazar found it breeding at San José del Rancho in July. His first nest, discovered on the 7th, contained four eggs on the point of hatching, and was not disturbed. Two others, taken respectively on the 14th and 19th of the month, had full sets of four eggs each, all freshly laid. One of these nests, built in the fork of a bush at a height of about five feet, measures as follows: Greatest external diameter, 2.25; greatest external depth, 2.00; internal diameter at top, 1.30; internal depth, 1.10; greatest thickness of walls, .50. The exterior is composed of gray, hemp-like, vegetable fiber and narrow strips of reddish brown bark, and is decorated with a very few lichens, all these materials being over-wrapped and kept in place by a nearly invisible tissue of spider-web. The interior is lined with fragments of silky cocoons and a few feathers. The other nest, which was placed in the fork of a small tree about ten feet above the ground, and which is essentially similar to the specimen just described, save that it has no lichens whatever, measures externally 2.15 in diameter by 2.10 in depth; internally, 1.40 in diameter by 1.50 in depth. Both nests are smaller and more compact than any of the nests of *P. caerulea* in my collection. The eggs of one set are ovate in shape, and measure respectively: .59 × .44, .59 × .45, .60 × .45 and .60 by .44. The ground-color is greenish white; the markings, which are generally distributed, but most numerous and crowded about the larger ends, are reddish brown, purplish, and lavender. The eggs of the other set are blunt ovate, and measure respectively: .56 × .43, .56 × .44, .56 × .43 and .57 by .45. The ground-color is like that of the eggs just described, but almost all the spots are bright reddish brown

and restricted to the larger ends, where they are grouped in what is known as the "wreath pattern."

In Lower California *P. c. obscura* seems to be practically confined to the Cape Region, for to the northward Mr. Bryant has obtained only a single specimen — "at San Julio, near Comondu, in March, 1888." It is also found in southern and central California, as well as in southern Arizona and northwestern Mexico.

Polioptila plumbea (Baird).

Plumbeous Gnatcatcher.

Polioptila melanura Baird, Proc. Acad. Nat. Sci. Phila., 1859, 301 (Cape St. Lucas), 304 (crit.; Cape St. Lucas); Rev. Amer. Birds, pt. I. 1864, 67, 68 (descr.; crit.; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 81, 82 (descr. nest from Cape St. Lucas, birds abundant).

Polioptila plumbea Belding, Proc. U. S. Nat. Mus., V. 1883, 535 (Cape Region), 547 (San José del Cabo). Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 318 (Cape St. Lucas; Cape Region). Townsend, Proc. U. S. Nat. Mus., XIII. 1890, 137 (Cape St. Lucas; La Paz).

Of this Gnatcatcher, Mr. Frazar's collection contains only three males in full plumage, all from La Paz, two taken in March, one in April. Two have the lores mixed slightly with ashy. In the third the lores are wholly ashy white, and there is a whitish spot a little above and behind the eye. All my Lower California specimens seem to have shorter tails than the birds which inhabit Arizona and Texas.

Mr. Belding characterizes the Plumbeous Gnatcatcher as "very common," and mentions seeing a brood of young just out of the nest on April 14, 1882. Mr. Frazar met with it only at La Paz and San José del Cabo and not in any numbers at either place. In fact, he is inclined to regard it as rather rare in the Cape Region. Mr. Bryant "found it on Santa Margarita Island, and from the west coast to the Gulf in about lat. 26° N." A little further to the northward on the Peninsula, as well as in southern California, it is replaced by the closely allied *P. californica*, but *P. plumbea* reappears in southern Arizona, and is common throughout northwestern Mexico.

Hylocichla ustulata (Nutt.).

Russet-backed Thrush.

Mr. Frazar collected four males of this species on the Sierra de la Laguna in May, two on the 4th, one on the 7th, and one on the 16th. He also obtained a female at Triunfo on June 13th. All of these birds are typical *ustulata* (as now restricted), and one of them (the specimen taken on May 7) is ultra-typical of that form, having the under tail coverts and crissum heavily washed

with rusty ochraceous, the buffy of the jugulum exceptionally rich, and the rufous tinge on the flanks, wings, tail, and upper parts generally, deeper and more pronounced than in any of the specimens in my collection from British Columbia or Washington. If Mr. Frazar's birds were, as both he and I believe, breeding or about to breed in the region where they were obtained, they furnish an interesting case of interrupted distribution, for true *ustulata* is not known to occur in summer in the southern or central portions of California, where it is replaced by the slightly paler, grayer form *H. u. oedica.*

The Russet-backed Thrushes found by Mr. Frazar on the Sierra de la Laguna in May were all met with in rather open oak and pine woods near water, where they were apparently settled and preparing to breed. None were seen elsewhere save at Triunfo, where a single female was shot on June 13 in a shaded arroyo. This bird was unmistakably incubating, and must have had a nest and eggs somewhere in the neighborhood. These are the only known instances of the occurrence of the Russet-backed Thrush in the southern part of Lower California, but near the northern boundary it was "seen at Hansen's as late as May 14, 1884, by Mr. Belding, and after the middle of May southeast of San Rafael."[1] Mr. Anthony found it as late as May 25 on San Pedro Martir, where, he thinks, "it is possibly a resident of the pines, but those taken showed little enlargement of the ovaries, and it is more probable that they were belated migrants."[2]

Hylocichla guttata (Pall.).

Alaska Hermit Thrush.

(?) *Hylocichla unalascae* Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote, part (Cape St. Lucas).

Hylocichla unalascae Belding, *Ibid.*, VI. 1883, 346, part (Casa Pintada, Victoria Mts., Feb. 17, 1883).

Turdus aonalaschkae Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 319, part (Victoria Mts.).

Soon after concluding a study of the smaller western forms of the Hermit Thrush, some of the results of which are given in this paper under *Hylocichla guttata nana*, I asked Mr. Oberholser, who had seen my specimens and was aware of the changes which I had decided to make in the names of two of the forms, to carefully examine all the skins in the National Museum from the Cape Region, and let me know his opinion regarding them. In reply to this request, he wrote me, under date of April 30, 1902, as follows: "I have been unable to find any of Xantus's specimens, . . . but discovered three collected by Belding, as follows: —

"One from Casa Pintada, Lower California, February 17, 1883, is unquestionably *guttata.*

[1] Bryant, Proc Calif. Acad. Sci., 2d ser., II. 1889, 319.

[2] Zoe, IV. 1893, 246.

"One from Laguna, Lower California, February 1, 1883, is intermediate between *guttata* and *nana*, but apparently nearer the former.

"One from Casa Pintada, February 17, 1883, is quite typical *nana*."

Hylocichla guttata auduboni (Baird).

Audubon's Hermit Thrush.

(?) *Hylocichla unalascae* Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote, part (Cape St. Lucas). Belding, *Ibid.*, VI. 1883, 346, part (Victoria Mts.).

(?) *Turdus aonalaschkae* Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 319, part (Victoria Mts.).

Audubon's Thrush is represented in Mr. Frazar's collection by six skins, all obtained on the Sierra de la Laguna between May 11 and June 8. One of these birds (No. 14,515, ♀ May 27, 1887) is small enough to be referred to the so-called "*sequoiensis*" of California, a form which does not seem to me worth recognition. The others agree closely in size, as well as in every other respect, with breeding specimens of *auduboni* from the Rocky Mountain region.

This Thrush, which has not been previously reported from any portion of Lower California, was found by Mr. Frazar only on the Sierra de la Laguna, where it inhabited deep, moist, shady cañons, and also, to some extent, dry pine woods. It was not numerous, but was seen almost daily during May, and up to the 9th of June when Mr. Frazar started for Triunfo. The males were in full song, and there can be little doubt that they and their mates were settled for the season and preparing to breed on this mountain. It is singular that no form of Hermit Thrush was found on San Pedro Martir by Mr. Anthony.

H. a. auduboni breeds rather commonly in the mountains of California and as far south as Orizaba in Mexico, while it has been taken in Guatemala in winter.

Hylocichla guttata nana (Aud.).

Dwarf Hermit Thrush.

(?) *Hylocichla unalascae* Ridgway, Proc. U. S. Nat. Mus., V. 1883, 533, footnote, part (Cape St. Lucas).

Hylocichla unalascae Belding, *Ibid.*, VI. 1883, 346, part (Casa Pintada, Victoria Mts., Feb. 17, 1883).

Turdus aonalaschkae, Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 319, part (Victoria Mts.).

As Mr. Nelson has pointed out,[1] the application of Gmelin's barbarous name *aonalascensis* (or *aonalaschkae*, as it is now generally written) to the Dwarf Hermit Thrush is ill advised. Latham's description upon which the name is

[1] Rept. Nat. Hist. Coll. Alaska, 1887, 218, 219.

based is altogether too indefinite to be determinable. If his bird was really a Hylocichla at all — which is doubtful — it is most likely to have been the Gray-cheeked Thrush. The name *guttata* of Pallas, on the other hand, rests on a careful description, which, although taken from a young bird, unmistakably relates to the Alaska Hermit Thrush.

Mr. W. H. Osgood has lately separated [1] this bird into two forms, a gray one, for which he retains the name *aonalaschkae*, and of which he has examined summer specimens from Nushagak, Kukak Bay, and Kadiak Island, Alaska, and a browner, more richly colored bird which breeds on the "islands and coasts of British Columbia and southeastern Alaska" and which he proposes to call *verecunda*. Still a third form — *slevini* — said to be the grayest of them all and to inhabit in summer the "cloudy coast belt of California, from southern Monterey County northward, locally at least, to Sonoma County" has been since named and described by Mr. Grinnell.[2] I have a large series of Dwarf Thrushes from California, Oregon, and British Columbia, but few, if any, of them can be safely assumed to have been taken on their breeding grounds. Nevertheless, they apparently represent all three of the forms just mentioned.

With *slevini* it is unnecessary to deal in this connection, for it is not known to have occurred in the Cape Region. *Aonalaschkae* — or *guttata*, as I prefer to call it — and *verecunda* seem to me sufficiently unlike to be recognized as distinct subspecies, provided they really occupy different breeding grounds; but *verecunda*, as Mr. Osgood evidently suspected might prove to be the case, is nothing more nor less than the *nanus* of Audubon. I am aware, of course, that several ornithologists have argued [3] — and with some plausibility because of the lack of definite evidence to the contrary — that this name was based primarily on an exceptionally small specimen of the Hermit Thrush of eastern North America and not on the skin which Audubon mentions having received from the Columbia River. Probably no one of these writers was aware that this skin is still in existence — in the collection of the Museum of Comparative Zoölogy. It bears three labels. On the original one is inscribed *in Audubon's own handwriting*, "*Turdus terrestris*. Aud. Columbia River," to which is added, in Mr. John Cassin's hand and in red ink, "J. J. Audubon's label." The second label is evidently Mr. Cassin's, and reads, "John Cassin — Philadelphia — 1864. *Turdus nanus*, Audubon, Dr. J. K. Townsend's collection Mr. John G. Bell,[4] Columbia River." The third label is that of the Museum of Comparative Zoölogy, which acquired the specimen many years ago by exchange with Brown University.

[1] Auk, XVIII. 1901, 183–185.

[2] *Ibid.*, 258–260.

[3] Cf. Brewer, Proc. Bost. Soc. Nat. Hist. XVII. 1875, 438, footnote; Coues, Birds Col. Valley, 1878, 22–25; Osgood, *Loc. cit.*

[4] Mr. Bell could not well have had anything to do with the capture of this specimen, but Mr. Cassin may have obtained it from him. When I first made his acquaintance, some thirty years ago, he still had several of Audubon's skins in his possession.

This interesting bird, to which my attention was first called by Mr. Walter Faxon, is an exceptionally brown, richly-colored specimen of the form which Mr. Osgood has called *verecunda*.[1] Although in full winter plumage, it retains on its wing coverts several of those rusty, tear-shaped spots which are invariably characteristic of the juvenal plumage of most Hylocichlae, and which also frequently reappear in their first winter plumages. On comparing this specimen with the life-size figure of *Turdus minor* in the elephant folio edition of Audubon's immortal work,[2] Mr. Faxon and I find that the two correspond satisfactorily in respect to their general coloring (that of the figure is somewhat browner, however, than that of the skin) and so very minutely in the measurements of the various parts as to leave no doubt in our minds that the bird here considered was that from which Audubon's figure of *T. minor* was drawn. It was probably taken by Dr. Townsend soon after his arrival at the Columbia River, in the autumn of 1834, and should not be confounded with the "female specimen of a Thrush" procured "on the Columbia River on the 19th June 1838," by Dr. Townsend, and said by Audubon "to differ in no other respect from specimens of *Turdus Wilsonii* than in having some of the spots on the sides of the neck and the breast of a darker brown."[3] The latter measured "seven inches two and a half twelfths in length," and was probably an Oregon Thrush (*Hylocichla ustulata*).

Turdus nanus was afterwards based by Audubon[4] partly on his plate of *T. minor*, but also on a detailed description which closely fits the Columbia River specimen now in the Museum of Comparative Zoölogy, even the tear-shaped spots being mentioned in the following terms: "Secondary coverts tipped with yellowish-red, which on some of the inner runs a little way along the shaft." Some of the measurements given in connection with this description do not, however, agree with those of the Townsend skin. Very possibly they were taken by Audubon from his note-book and originally from a fresh specimen of a small eastern bird.

These facts have convinced both Mr. Faxon and me that the specimen just considered may be safely regarded as the actual type of *Turdus nanus*. If we are correct in so thinking, this name, as I have already indicated, must necessarily take the place of *verecunda*, provided the separation proposed by Mr. Osgood be adopted.

All of the four small Hermit Thrushes collected in the Cape Region by Mr. Frazar are apparently referable to *nana*, although one of them (No. 14,527, ♀, Triunfo, December 5, 1887) is somewhat too gray to be typical of that form, and perhaps is intermediate between it and true *guttata*. Another, killed on the Sierra de la Laguna on April 27, is in such worn and faded plumage as to suggest that it may have been breeding.

[1] I have directly compared it with Mr. Osgood's series of breeding specimens (including the type) of this form from the Queen Charlotte Islands.

[2] Birds Amer., pl. 419, fig. 1.

[3] Orn. Biog. V. 1849, 203, 204.

[4] *Loc. cit.*, 204–206.

The Dwarf Thrush was found in January at Cape St. Lucas by Mr. Xantus, and Mr. Belding has reported it "common; possibly resident" in the "Victoria Mountains." It is probable, however, that some of the birds seen by the latter observer were *H. g. auduboni*, which is not uncommon, and doubtless breeds in these mountains, and that the Dwarf Thrush occurs in the Cape Region only during the migrations and in winter, and then in no great numbers. This, at least, is Mr. Frazar's opinion, and it is confirmed, in the main, by the evidence afforded by his skins, although it must be admitted that it is difficult to account for the excessively worn and generally shabby condition of plumage of the specimen above referred to, other than by the assumption that it was a breeding bird. If *auduboni* and *guttata* really pass the summer together or in close proximity in the Cape Region without *interbreeding*, the case will be one of peculiar interest in view of the fact that both are regarded as mere geographical forms of the same species.

Mr. Bryant states that he "saw a few" "Dwarf Thrushes" on Santa Margarita Island in January, 1888. They do not appear to have been met with anywhere in the central or northern portions of the Peninsula, either by him or by Mr. Anthony.

Merula migratoria propinqua (Ridgw).

Western Robin.

The relationship of a Robin taken by Mr. Frazar at San José del Rancho on December 22, 1887, is open to some doubt, for the specimen is apparently intermediate between *migratoria* and *propinqua*, combining the large, distinct, white tail spots of the former with the decidedly ashy back, and restricted black on the head, of the latter. On the whole, however, the bird seems to be nearest *propinqua*, a form which has not been previously reported from the southern portion of Lower California, although in the northern districts it is not uncommon in winter and early spring, feeding chiefly on manzanita berries and ranging at least as far southward as San Quintin.[1]

The Western Robin is a winter visitor only, to the lowlands of California, but it breeds in the mountains as far south as Los Angeles county and northward into British Columbia. In Alaska it is unknown, all the Robins of that region being, apparently, true *migratoria*. Salvin and Godman state[2] that the latter occurs in summer in the mountains of Orizaba, and that they have examined a young bird in spotted plumage taken near the City of Mexico, while they make no mention of *M. m. propinqua*, but all my winter specimens from western Mexico, as well as several breeding birds shot at Pinos Altos and Jesus Maria, are typical *propinqua*.

[1] Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 319.

[2] Biol. Centr.-Amer., Aves, I. 1879, 20, 21.

Merula confinis (Baird).

St. Lucas Robin.

Turdus confinis, Baird, Rev. Amer. Birds, pt. I. 1864, 29–31 (orig. descr.; type from Todos Santos). Elliot, Illustr. New and Unfig. N. Amer. Birds, I. 1869, introd. ("*T. migratorius*;" Todos Santos). Cooper, Orn. Cal., 1870, 9, 10 (descr.; crit.; figures head; Cape St. Lucas). Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, pl. 2, fig. 1. Coues, Birds Col. Valley, 1878, 9 (variety of *Turdus migratorius*). Seebohm, Cat. Birds Brit. Mus., V. 1881, 222 (descr.; Todos Santos).

[*Turdus*] *confinis* Gray, Hand-list, 1. 1869, 258, no. 3,756. Dubois, Synop. Avium, fasc. VI. 1901, 401 (Basse-Californie).

[*Turdus migratorius*] var. *confinis* Coues, Key N. Amer. Birds, 1872, 72 (descr.; Cape St. Lucas).

Turdus migratorius, var. *confinis* Coues, Check List, 1873, 5, no. 1 a. Baird, Brewer, and Ridgway, Hist. N. Amer. Birds, I. 1874, 27, 28, pl. 2, fig. 1 (descr.; crit.; Todos Santos). Jasper, Birds N. Amer., 1878, 173, pl. 114, fig. 21 (Cape St. Lucas).

Merula confinis Ridgway, Nom. N. Amer. Birds (Bull. U. S. Nat. Mus., no. 21), 1881, 11, 60, 74, no. 8; Proc. U. S. Nat. Mus., V. 1883, 533, footnote (Todos Santos); VI. 1883, 158, 159 (crit.; Todos Santos; Laguna). Belding, *Ibid.*, 346 (crit.; Laguna trail; Victoria Mts.). A. O. U., Check List, 1886, 345, no. 762. Bryant, Proc. Calif. Acad. Sci., 2d ser., II. 1889, 319 (Todos Santos; Victoria Mts.); Zoe, II. 1891, 198 (Victoria Mts.). Emerson, *Ibid.*, I. 1890, 46 (Hayward's, Calif.). Keeler, *Ibid.*, 250 (Hayward's, Calif.). Allen, Auk, X. 1893, 142 (tropical type).

Turdus migratorius confinis Coues, Check List, 2d ed., 1882, 23, no. 3.

T.[*urdus*] *confinis* Coues, Key N. Amer. Birds, 4th ed., 1894, 244, 245 (descr.; Lower Calif.).

M.[*erula*] *confinis* Ridgway, Man. N. Amer. Birds, 2d ed., 1896, 578 (descr.; near Cape St. Lucas).

Of this hitherto rare bird, Mr. Frazar collected over one hundred and fifty specimens. These represent very fully the nuptial and late autumn plumages, but unfortunately do not include examples of the young in first plumage. The sexes are not certainly distinguishable, either by size or color, although the females average a trifle smaller than the males and are usually whiter beneath, with less spotting on the throat. In spring birds the color of the under parts varies from creamy buff to light cream, or creamy white. November and December examples have the under parts pure, deep, almost ochraceous, buff. Fully ten per cent of the entire series show more or less ashy on the breast, this varying in tone and extent from a few pale gray, nebulous spots near the tips of the feathers to numerous brownish-ashy blotches which form a broad and almost solid pectoral band. This clouding is most common and pronounced in autumnal specimens, but some of these lack it wholly, while it sometimes occurs in spring birds, a few of which, indeed, are quite as

conspicuously marked as are any of the autumn specimens. Nevertheless, it is apparently a characteristic of immaturity which, perhaps, does not wholly disappear before the second or third year of the bird's life.

The amount of white on the sides of the head, upon which some stress has been laid by writers as a probable specific character, proves to be highly variable. Some birds have a distinct white ring completely encircling the eye, and, in addition, a broad white stripe extending along the side of the head above the eye nearly to the nostril. In others the white is confined to the eyelids, and a short space a little above the eye, the remainder of the sides of the head being perfectly plain and of about the same color as the crown. These extremes are connected by various intermediate styles. Similarly, the throat in some birds is chiefly white with only a few narrow, dark markings, while in others the streaks are so broad and numerous as to be almost fused. The majority of specimens have the tail perfectly plain, or with at most a very narrow light edging on the tips of the outer feathers. In two of my skins, however, the outer two feathers are conspicuously white-tipped, and in one of these birds the white spot extends back ten one-hundredths of an inch on the outermost feathers.

The bill is perhaps the most variable feature of all, being sometimes long, slender, strongly hooked, and distinctly notched at the tip, sometimes broad and deep, with the tip of the upper mandible barely extending beyond that of the lower. The color of the bill is highly variable. In most of the spring specimens it is wholly pale, pure yellow, with usually, but not invariably, a dusky space at the tip of the upper mandible. One bird (No. 14,469, April 30) has the base of the lower, and the middle of the upper, mandible wood brown, the remainder of the bill being dark horn-colored. This is about the average style of coloring with autumn specimens, but some of the latter have the entire upper, and the terminal half of the lower mandible horn-colored, while in a few both mandibles are nearly uniform yellowish brown. Although a dark bill is not always correlated with the presence of ashy clouding beneath, I am inclined to believe that, like the latter, it indicates immaturity, and is usually, if not always, characteristic of young birds, certainly persisting during the first autumn, and, with some individuals, probably through the following spring and summer, also.

This interesting species, originally described by Professor Baird from a bird killed by Mr. Xantus at Todos Santos in the summer of 1860, was practically rediscovered by Mr. Belding in February, 1883, but one specimen besides the type having been taken up to this time. Mr. Belding gives the following account of his experience: "Only about a dozen Cape Robins were seen, and these were all on the Laguna trail. About half were found singly, one as low as 2,500 feet above the sea-level. Mr. Cipriano Fisher, an American, who has often hunted deer at Laguna, informed me that Robins were sometimes abundant there. This may be the case when the berries of the California Holly (*Heteromeles*), which grows abundantly in the neighborhood, are ripe."

Mr. Frazar was the next to meet the St. Lucas Robin in its native haunts. He found it first on the Sierra de la Laguna, during his ascent of this mountain on April 26, 1887. It was common at this date, and by the end of May, exceedingly abundant, for its numbers continued to increase during nearly the whole of Mr. Frazar's stay, but up to the time of his departure (June 9), it was invariably seen in flocks, and none of the many specimens examined showed any indications that their breeding season was at hand. The people living on the mountain asserted that the birds do not lay before July. Mr. Frazar found a number of old nests which were constructed precisely like those of the common Robin, and placed in similar situations. The males were frequently heard singing. "The song resembles that of the eastern Robin, but is weaker and less distinct, reminding one of the efforts of a young bird just learning to sing. I did not hear a single loud, clear note."

During his second visit to La Laguna, Mr. Frazar saw in all only ten St. Lucas Robins, — one on November 28, two on November 30, one on December 1, and six on December 2. This led him to conclude that most of them leave the mountains in winter, a supposition speedily confirmed, for about two weeks later (December 18–25) he found them abundant at San José del Rancho. At this place a few breed, also, for three were seen during July, and one of them, a female, shot on the 27th, was incubating, and must have had a nest and eggs somewhere in the immediate neighborhood. A fourth was met with on June 9, about ten miles from the base of the Sierra de la Laguna on the road to Triunfo.

The St. Lucas Robin is evidently one of the most characteristic species of the Cape Fauna, for it does not range even so far to the northward as La Paz, and, according to Mr. Bryant, is unknown to the people living in the central and northern portions of the Peninsula. A single straggler, which is said to be perfectly typical, was taken, however, at Hayward's, California, on January 2, 1882, by Mr. W. Otto Emerson.[1] This is the only known instance of the occurrence of the species outside the borders of its little realm near the southern extremity of Lower California.

The total number of species and subspecies of birds from the Cape Region of Lower California, included in the foregoing list, is as follows: —

Species	167
Subspecies	88
Total . . .	255

[1] Zoe, I. 1890, 46. There is a subsequent record by Mr. C. A. Keeler (*Ibid.*, 250) which apparently relates to the same bird, although the date of its capture is given as January 27, 1883.

LIST OF SPECIES AND SUBSPECIES DESCRIBED AS NEW

Totanus melanoleucus frazari.
Megascops xantusi.
Bubo virginianus elachistus.
Tachycineta thalassina brachyptera.

LIST OF SPECIES AND SUBSPECIES RECORDED FOR THE FIRST TIME FROM THE CAPE REGION OF LOWER CALIFORNIA

Larus atricilla.
Sterna caspia.
hirundo.
antillarum.
Hydrochelidon nigra surinamensis.
Sula brewsteri.
Ardetta exilis.
Ardea virescens anthonyi.
Rallus virginianus.
Gallinula galeata.
Phalaropus lobatus.
Macrorhamphus scolopaceus.
Tringa maculata.
bairdii.
Totanus flavipes.
Heteractitis incanus.
Charadrius dominicus.
Arenaria morinella.
Archibuteo ferrugineus.
Haliaeetus leucocephalus.
Falco peregrinus anatum.
columbarius richardsonii.
sparverius deserticolus.
Coccyzus americanus occidentalis.
Chaetura vauxii.
Molothrus ater.
Astragalinus psaltria arizonae.
Spiza americana.
Hirundo erythrogaster.
Vireo vicinior.
Mniotilta varia.
Dendroica aestiva sonorana.
rubiginosa.
Hylocichla ustulata.
guttata auduboni.
Merula migratoria propinqua.

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INDEX.

Abbreviatus, Buteo, 87.
Accipiter cooperii, 82.
mexicanus, 82.
velox, 81.
accipitrinus, Asio, 93.
Actitis macularia, 69.
aculeata, Sitta carolinensis, 203.
acuta, Dafila, 45.
Aegialitis nivosa, 64, 72.
semipalmata, 72.
vocifera, 71.
wilsonia, 73.
rufinucha, 73.
Aëronautes melanoleucus, 112.
aestiva, Dendroica, 179.
aethereus, Phaëthon, 33.
affinis, Aythya, 46.
Cardinalis cardinalis, 156.
Heleodytes brunneicapillus, 197.
Pooecetes gramineus, 137.
Agelaius gubernator californicus, 127.
phoeniceus, 127.
neutralis, 127.
sonoriensis, 127.
tricolor, 127.
Aimophila ruficeps, 149.
scottii, 149.
sororia, 148.
Alaska Hermit Thrush, 211, 213.
Alaskan Yellow Warbler, 181.
alaudinus, Ammodramus sandwichensis, 137.
alba, Guara, 48.
albatus, Vireo pusillus, 176, 177.
albigula, Pipilo fuscus, 151.
albociliatus, Phalacrocorax dilophus, 36.
alcyon, Ceryle, 102.
alleni, Selasphorus, 113.
Allen's Hummingbird, 5.
amaurosoma, Nectris, 29.
American Avocet, 59.
Barn Owl, 92.
Bittern, 49.
Coot, 57.
American Eared Grebe, 5, 6, 13.
Egret, 51.
Golden Plover, 71.
Osprey, 92.
Pipit, 193.
Raven, 5, 125.
Redstart, 192.
White-fronted Goose, 47.
Pelican, 37.
Widgeon, 43.
americana, Aythya, 45.
Fulica, 57.
Mareca, 43.
Recurvirostra, 59.
Spiza, 162.
Ammodramus halophilus, 139–141.
rostratus, 138, 140, 141.
guttatus, 139, 141.
sanctorum, 140, 141.
sanctorum, 141.
sandwichensis alaudinus, 137.
savanna, 138.
savannarum bimaculatus, 142.
passerinus, 142.
amoena, Cyanospiza, 160, 161.
Ampelis cedrorum, 171.
Amphispiza bilineata deserticola, 148.
pacifica, 148.
Anas boschas, 42.
anatum, Falco peregrinus, 89.
angustifrons, Melanerpes, 103, 105, 205.
Ani, Groove-billed, 100.
Anser albifrons gambeli, 47.
anthonyi, Ardea virescens, 54.
Anthony's Green Heron, 54.
Anthus cervinus, 193.
pensilvanicus, 193.
antillarum, Sterna, 26.
aonalascensis, Hylocichla, 212.
aonalaschkae, Hylocichla, 212, 213.
Aphelocoma californica, 124, 125.
hypoleuca, 123.
obscura, 125.
aquila, Fregata, 40.

Archibuteo ferrugineus, 88.
Ardea candidissima, 51.
egretta, 51.
herodias, 50.
rufescens, 52.
tricolor ruficollis, 52.
virescens, 53, 54.
anthonyi, 54.
frazari, 53, 54.
wardi, 50.
Ardetta exilis, 50.
arenaria, Calidris, 64.
Arenaria interpres, 74.
melanocephala, 74.
morinella, 74.
arizela, Geothlypis trichas, 186.
Arizona Goldfinch, 136.
Hooded Oriole, 131.
arizonae, Astragalinus psaltria, 136.
Dryobates, 106.
Spizella socialis, 144.
Arkansas Goldfinch, 5, 135.
Ashy Titmouse, 10, 204.
Asio accipitrinus, 93.
asio, Megascops, 94, 95.
Astragalinus psaltria, 135, 136.
arizonae, 136.
mexicanus, 136.
ater, Molothrus, 126.
atriciila, Larus, 22.
atrogularis, Spizella, 146.
audubоni, Dendroica, 182.
Hylocichla guttata, 212, 215.
Audubon's Caracara, 91.
Hermit Thrush, 212.
Warbler, 182.
aura, Cathartes, 80.
auricularis, Puffinus, 28, 31.
Auriparus flaviceps, 206.
lamprocephalus, 206.
Avocet, American, 59.
Aythya affinis, 46.
americana, 45.
collaris, 46.
aztecus, Troglodytes aëdon, 201.

Bachmani, Haematopus, 75.
bairdi, Dryobates scalaris, 103, 106.
Junco, 147.
Melanerpes formicivorus, 107.
bairdii, Tringa, 62.
Baird's Cormorant, 37.
Junco, 10, 99, 147.
Sandpiper, 62.
Verdin, 7, 206.
Bald Eagle, 88.
Baldpate, 8, 43.
Bank Swallow, 170.
Barn Owl, American, 92.
Swallow, 166.
Basilinna leucotis, 115.
xantusi, 113.
baueri, Limosa lapponica, 64.
Beautiful Bunting, 8, 160.
beldingi, Geothlypis, 187.
Rallus, 55.
Belding's Rail, 6, 7, 55.
Yellow-throat, 8, 187.
Belted Kingfisher, 102.
bendirei, Megascops asio, 94, 95.
bicolor, Tachycineta, 166.
bimaculatus, Ammodramus savannarum, 142.
Bird, Cedar, 171.
Frigate, 40.
Man-o'-war, 7, 40.
Red-billed Tropic, 6, 33.
Bittern, American, 49.
Least, 50.
Black and White Warbler, 178.
-bellied Plover, 5, 6, 70.
-chinned Sparrow, 146.
-crowned Night Heron, 54.
-headed Grosbeak, 158.
-necked Stilt, 60.
Oyster-catcher, 75.
Petrel, 6, 31, 32.
Pewee, 5.
Phoebe, 119.
Tern, 26.
-throated Gray Warbler, 183.
-vented Shearwater, 6, 26, 29.
Blackbird, Brewer's, 133.
Yellow-headed, 127.
Blue-footed Booby, 35.
Gannet, 35.
Grosbeak, Western, 159.
Heron, Great, 50.
-winged Teal, 44.
Bonaparte's Gull, 22.
Booby, Blue-footed, 35.
Brewster's, 34.
boschas, Anas, 42.
Botaurus lentiginosus, 49.
boucardi, Peucaea ruficeps, 149.
brachyptera, Tachycineta thalassina, 167.
brachypterus, Colymbus dominicus, 13.
Brachyramphus craveri, 15, 16.
hypoleucus, 15-19.
Brandt's Cormorant, 7, 37.
breweri, Spizella, 145.
Brewer's Blackbird, 133.
Sparrow, 5, 145.
brewsteri, Sula, 34.

Brewster's Booby, 34.
Brown Pelican, California, 7, 36, 38.
brunneicapillus, Heleodytes, 199.
brunnescens, Colaptes chrysoides, 109.
bryanti, Dendroica, 182.
Heleodytes brunneicapillus, 199.
Bubo virginianus, 96, 97.
elachistus, subsp. nov., 96.
pallescens, 97.
saturatus, 96.
Bunting, Beautiful, 8, 160.
Lark, 163.
Lazuli, 160.
Burrowing Owl, 97.
Bush-Tit, Grinda's, 10, 205.
Buteo abbreviatus, 87.
borealis calurus, 83.
costaricensis, 83, 85.
lucasanus, 83–86.
socorroensis, 83, 85.
Buzzard, Turkey, 88.

Cactus Wren, St. Lucas, 7, 197.
caerulea, Polioptila, 209.
Calamospiza melanocorys, 163.
calendula, Regulus, 208.
Calidris arenaria, 64.
California Brown Pelican, 7, 36, 38.
Cuckoo, 101.
Flycatcher, Lower, 117.
Gull, 6, 20.
Shrike, 172.
californianus, Geococcyx, 101.
californica, Aphelocoma, 124, 125.
Polioptila, 210.
californicus, Agelaius gubernator, 127.
Colymbus nigricollis, 13.
Larus, 20.
Lophortyx, 76.
Pelecanus, 38.
Phalaenoptilus nuttallii, 110.
Psaltriparus minimus, 206.
calurus, Buteo borealis, 83.
Calypte costae, 112.
candidissima, Ardea, 51.
canescens, Empidonax, 122.
Cañon Wren, Dotted, 200.
capitalis, Hedymeles melanocephalus, 159.
Caracara, Audubon's, 91.
Cardinal, St. Lucas, 7, 155.
Cardinalis cardinalis, 157.
affinis, 156.
igneus, 155.
sinaloensis, 156.
superbus, 156.
virginianus, 157.
cardinalis, Cardinalis, 157.
Carolina Dove, 78.
Rail, 56, 57.
carolina, Porzana, 56.
carolinensis, Nettion, 43.
Pandion haliaëtus, 92.
Carpodacus mexicanus frontalis, 134, 135.
ruberrimus, 133.
sonoriensis, 134.
caspia, Sterna, 23.
Caspian Tern, 7, 23.
cassinii, Vireo solitarius, 175.
Cassin's Kingbird, 116.
castaneiceps, Dendroica bryanti, 181.
Cathartes aura, 80.
Catherpes mexicanus punctulatus, 200.
Cedar Bird, 171.
Waxwing, 171.
cedrorum, Ampelis, 171.
celata, Helminthophila, 178.
cervinus, Anthus, 193.
Ceryle alcyon, 102.
Chaetura vauxii, 111.
Charadrius dominicus, 71.
Chat, Long-tailed, 190.
Chaulelasmus streperus, 42.
cheriway, Polyborus, 91.
chilensis, Totanus, 65.
Chipping Sparrow, Western, 144.
chlorura, Oreospiza, 154.
Chondestes grammacus strigatus, 142.
Chordeiles acutipennis texensis, 110.
chrysoides, Colaptes, 108.
cincinnatus, Phalacrocorax, 36.
cineraceus, Megascops asio, 94, 95.
Parus inornatus, 204, 206.
cinerascens, Myiarchus, 118.
cinereum, Toxostoma, 195.
cineritius, Empidonax, 121.
cinnamomeus, Helodromas solitarius, 67.
Cinnamon Teal, 44.
Circus hudsonius, 81.
Cistothorus palustris paludicola, 201, 202.
plesius, 202.
Clay-colored Sparrow, 145.
Cliff Swallow, 165.
Clivicola riparia, 170.
clypeata, Spatula, 45.
Coccyzus americanus occidentalis, 101.
Colaptes chrysoides, 108.
brunnescens, 109.
collaris, Aythya, 46.
Columba fasciata, 77.
vioscae, 76.
columbarius, Falco, 89, 90.
Columbigallina passerina pallescens, 79.
Colymbus dominicus, 13.
brachypterus, 13.

Colymbus nigricollis californicus, 13.
Common Tern, 25.
confinis, Merula, 216.
Pooecetes gramineus, 137.
Contopus richardsonii, 120.
peninsulae, 120.
cooperi, Megascops, 95.
cooperii, Accipiter, 82.
Cooper's Hawk, 82.
Coot, 81, 87, 92.
American, 57.
Cormorant, 12.
Baird's, 37.
Brandt's, 7, 37.
Farallone, 5, 6, 36.
coronata, Dendroica, 183.
Corvus corax sinuatus, 125.
costae, Calypte, 112.
costaricensis, Buteo borealis, 83, 85.
Costa's Hummingbird, 5, 112.
Coturniculus perpallidus, 142.
Cowbird, 126.
Dwarf, 126.
craveri, Brachyramphus, 15, 16.
Craveri's Murrelet, 6, 16.
crissalis, Pipilo fuscus, 153, 154.
Crotophaga sulcirostris, 100.
Crymophilus fulicarius, 58.
Cuckoo, California, 101.
cucullatus, Lophodytes, 41.
cuneatus, Puffinus, 30.
Curlew, Hudsonian, 7, 70.
Long-billed, 7, 70.
cyanocephalus, Scolecophagus, 133.
cyanoptera, Querquedula, 44.
Cyanospiza amoena, 160, 161.
versicolor, 161, 162.
pulchra, 160.

Dafila acuta, 45.
Dark-bodied Shearwater, 29.
delawarensis, Larus, 21.
delicata, Gallinago, 60.
Dendroica aestiva, 179.
morcomi, 179, 180.
rubiginosa, 180, 181.
sonorana, 179, 180.
auduboni, 182.
bryanti, 182.
castaneiceps, 181.
coronata, 183.
nigrescens, 183.
townsendi, 184.
Desert Sparrow, 5, 148.
Hawk, 90.
deserticola, Amphispiza bilineata, 148.
deserticolus, Falco sparverius, 90, 91.
Dickcissel, 162.
difficilis, Empidonax, 120.
discors, Querquedula, 44.
dominicus, Charadrius, 71.
Colymbus, 13.
Dotted Cañon Wren, 200.
Dove, Carolina, 78.
Ground, 78.
Mexican Ground, 79.
Mourning, 78.
White-winged, 77, 79.
Dowitcher, Long-billed, 61.
Dryobates arizonae, 106.
lucasanus, 102.
scalaris bairdi, 103, 106.
villosus hyloscopus, 106.
Duck Hawk, 89.
Lesser Scaup, 46.
Ring-necked, 46.
Ruddy, 46.
Dwarf Cowbird, 126.
Hermit Thrush, 212.
Horned Owl, 10, 96.

Eagle, Bald, 88.
Eared Grebe, American, 5, 6, 13.
Egret, American, 51.
Reddish, 7, 52, 53.
egretta, Ardea, 51.
elachistus, Bubo virginianus, 96.
elegans, Sterna, 24.
Elegant Tern, 24.
Elf Owl, 99.
Empidonax canescens, 122.
cineritius, 121.
difficilis, 120.
griseus, 122.
obscurus, 123.
wrightii, 123.
Erennetes occidentalis, 63.
Erismatura jamaicensis, 46.
erythrogaster, Hirundo, 166.
erythrophthalmus, Pipilo, 151.
erythrorhynchos, Pelecanus, 37.
excubitorides, Lanius ludovicianus, 172, 173.
exilis, Ardetta, 50.

Falco columbarius, 89, 90.
richardsonii, 90.
mexicanus, 89.
peregrinus anatum, 89.
sparverius, 91.
deserticolus, 90, 91.
peninsularis, 90.
Falcon, Prairie, 89.
Farallone Cormorant, 5, 6, 36.
fasciata, Columba, 77.

ferrugineus, Archibuteo, 88.
Ferruginous Rough-Leg, 88.
-legged Hawk, 10.
Finch, St. Lucas House, 7, 133.
Fish Hawk, 5.
flaviceps, Auriparus, 206.
flavipes, Totanus, 66.
Flicker, Gilded, 108.
Florida Gallinule, 57.
Flycatcher, Gray, 122.
Lower California, 117.
St. Lucas, 7, 10, 121.
Vermilion, 123.
Western, 120.
Forbush's Sparrow, 150.
formicivorus, Melanerpes, 107.
forsteri, Sterna, 25.
Forster's Tern, 25.
frazari, Ardea virescens, 53, 54.
Haematopus, 74, 75.
Totanus melanoleucus, 65, 66.
Frazar's Green Heron, 7, 53.
Oyster-catcher, 5, 74.
Fregata aquila, 40.
Frigate Bird, 40.
frontalis, Carpodacus mexicanus, 134, 135.
Frosted Poor-will, 109.
Fulica, 81, 87, 92.
americana, 57.
fulicarius, Crymophilus, 58.
fuscus, Pelecanus, 38.
Pipilo, 152.

GADWALL, 42.
galapagensis, Haematopus, 75.
galeata, Gallinula, 57.
Gallinago delicata, 60.
Gallinula galeata, 57.
Gallinule, 12.
Florida, 57.
gambeli, Anser albifrons, 47.
Lanius ludovicianus, 172.
gambelii, Zonotrichia leucophrys, 143, 144.
Gannet, Blue-footed, 35.
Gavia imber, 15.
Geococcyx californianus, 101.
Geothlypis beldingi, 187.
tolmiei, 185.
trichas, 187.
arizela, 186.
occidentalis, 187.
scirpicola, 186, 187.
sinuosa, 186, 187.
Gila Woodpecker, 107.
Gilded Flicker, 108.
gilvus, Vireo, 174.
Glaucidium hoskinsii, 98.
Glossy Ibis, White-faced, 48.
Gnatcatcher, 5.
Plumbeous, 210.
Western, 209.
Godwit, 61.
Pacific, 64.
Golden Plover, American, 71.
Goldfinch, Arizona, 136.
Arkansas, 5, 135.
Goose, American White-fronted, 47.
Grasshopper Sparrow, Western, 142.
Gray Flycatcher, 122.
Vireo, 177.
Warbler, Black-throated, 183.
Yellow-legs, 7, 65.
graysoni, Micropallas, 99.
Great Blue Heron, 50.
Greater Yellow-legs, 66.
Grebe, American Eared, 5, 6, 13.
Pied-billed, 7, 14.
Short-winged, 13, 47.
Green Heron, Anthony's, 54.
Frazar's, 7, 53.
-tailed Towhee, 154.
-winged Teal, 43.
grindae, Psaltriparus, 205.
Grinda's Bush-Tit, 10, 205.
grinnelli, Regulus calendula, 208.
Grinnell's Water-Thrush, 7, 184.
griseus, Empidonax, 122.
Parus inornatus, 204, 205.
Puffinus, 29.
Groove-billed Ani, 100.
Grosbeak, Black-headed, 158.
Western Blue, 159.
Ground Dove, 78.
Mexican, 79.
Guara alba, 48.
guarauna, Plegadis, 48.
Guiraca caerulea lazula, 159.
Gull, 12.
Bonaparte's, 22.
California, 6, 20.
Heermann's, 5, 6, 21, 36.
Laughing, 22.
Ring-billed, 21.
Western, 5, 7, 20.
guttata, Hylocichla, 211, 213.
guttatus, Ammodramus rostratus, 139, 141.

HAEMATOPUS BACHMANI, 75.
frazari, 74, 75.
galapagensis, 75.
palliatus, 75.
Haliaeetus leucocephalus, 88.
Halocyptena microsoma, 31.
halophilus, Ammodramus, 139–141.

harrisi, Parabuteo unicinctus, 82.
Harris's Hawk, 82.
Hawk, Cooper's, 82.
Desert Sparrow, 90.
Duck, 89.
Ferruginous Rough-legged, 10.
Fish, 5.
Harris's, 82.
Marsh, 81.
Pigeon, 89.
St. Lucas Sparrow, 5, 90.
Sharp-shinned, 5, 81.
Zone-tailed, 87.
Hedymeles melanocephalus capitalis, 159.
heermanni, Larus, 21.
Heermann's Gull, 5, 6, 21, 36.
Heleodytes brunneicapillus, 199.
affinis, 197.
bryanti, 199.
Helminthophila celata, 178.
lutescens, 178, 179.
Helodromas solitarius, 67.
cinnamomeus, 67.
Hermit Thrush, Alaska, 211, 213.
Audubon's, 212.
Dwarf, 212.
herodias, Ardea, 50.
Heron, Anthony's Green, 54.
Black-crowned Night, 54.
Frazar's Green, 7, 53.
Great Blue, 50.
Louisiana, 52.
Snowy, 51.
Yellow-crowned Night, 55.
hesperia, Progne subis, 164, 170.
Heteractitis incanus, 68.
Himantopus mexicanus, 60.
Hirundo erythrogaster, 166.
hirundo, Sterna, 25.
Hooded Merganser, 41.
Oriole, Arizona, 131.
Horned Owl, Dwarf, 10, 96.
hoskinsii, Glaucidium, 98.
Hoskins's Pygmy Owl, 10, 98.
House Finch, St. Lucas, 7, 133.
Wren, Western, 201.
Hudsonian Curlew, 7, 70.
hudsonicus, Numenius, 70.
hudsonius, Circus, 81.
Hummingbird, Allen's, 5.
Costa's, 5, 112.
Xantus's, 5, 7, 8, 10, 113.
Hydrochelidon nigra surinamensis, 26.
Hylocichla aonalascensis, 212.
aonalaschkae, 212, 213.
slevini, 213.
verecunda, 213, 214.
Hylocichla guttata, 211, 213.
auduboni, 212, 215.
nana, 211, 212, 214.
sequoiensis, 212.
ustulata, 210, 214.
oedica, 211.
hyloscopus, Dryobates villosus, 106.
hypogaea, Speotyto cunicularia, 97.
hypoleuca, Aphelocoma californica, 123.
hypoleucus, Brachyramphus, 15–19.

Ibis, White, 48.
-faced Glossy, 48.
Wood, 7, 49.
Icteria virens longicauda, 190.
Icterus cucullatus nelsoni, 131.
parisorum, 128.
igneus, Cardinalis cardinalis, 155.
imber, Gavia, 15.
incanus, Heteractitis, 68.
inornata, Symphemia semipalmata, 67.
Intermediate Sparrow, 144.
interpres, Arenaria, 74.

Jamaicensis, Erismatura, 46.
Jay, 10.
Xantus's, 7, 123.
Junco, bairdi, 147.
Baird's, 10, 99, 147.

Killdeer, 7, 71.
Kingbird, Cassin's, 116.
Kingfisher, Belted, 102.
Kinglet, Ruby-crowned, 208.
knudseni, Puffinus, 30.

Laguna Sparrow, 148.
lagunae, Sitta carolinensis, 203.
lamprocephalus, Auriparus flaviceps, 206.
Lanius ludovicianus excubitorides, 172, 173.
gambeli, 172.
Large-billed Sparrow, 5, 7, 138.
Wood Pewee, 10, 120.
Lark Bunting, 163.
Sparrow, Western, 142.
Larus atricilla, 22.
californicus, 20.
delawarensis, 21.
heermanni, 21.
occidentalis, 20.
philadelphia, 22.
Laughing Gull, 22.
lazula, Guiraca caerulea, 159.
Lazuli Bunting, 160.
Least Bittern, 50.
Petrel, 6, 31.
Sandpiper, 5, 62.

Least Tern, 26.
Vireo, 176.
lentiginosus, Botaurus, 49.
lepida, Tachycineta, 167.
thalassina, 167, 169.
Lesser Scaup Duck, 46.
leucocephalus, Haliaeetus, 88.
leucogastra, Sula, 34, 35.
leucophrys, Zonotrichia, 143, 144.
leucoptera, Melopelia, 79.
leucopterus, Mimus polyglottos, 194.
leucotis, Basilinna, 115.
Limosa lapponica baueri, 64.
lincolnii, Melospiza, 149, 150.
Lincoln's Sparrow, 149.
lobatus, Phalaropus, 58.
loculator, Tantalus, 49.
Long-billed Curlew, 7, 70.
Dowitcher, 61.
-tailed Chat, 190.
longicauda, Icteria virens, 190.
longirostris, Numenius, 70.
Loon, 15.
Lophodytes cucullatus, 41.
Lophortyx californicus, 76.
vallicola, 76, 87.
Louisiana Heron, 52.
Tanager, 8, 163.
Lower California Flycatcher, 117.
lucasanus, Buteo borealis, 83–86.
Dryobates, 102.
Vireo solitarius, 174.
ludoviciana, Piranga, 163.
lunifrons, Petrochelidon, 165.
lutescens, Helminthophila celata, 178, 179.
Lutescent Warbler, 179.

Macgillivray's Warbler, 185.
Macrorhamphus scolopaceus, 61.
macroura, Zenaidura, 78.
macularia, Actitis, 69.
maculata, Tringa, 61.
magnirostris, Pipilo maculatus, 150.
Mallard, 42.
Mangrove Warbler, 7, 181.
Man-o'-war Bird, 7, 40.
Mareca americana, 43.
Marsh Hawk, 81.
Wren, 12.
Western, 202.
Martin, Western, 10, 164.
Purple, 170.
maxima, Sterna, 23, 24.
Meadowlark, Western, 128.
mearnsi, Toxostoma cinereum, 197.
megalonyx, Pipilo maculatus, 151.
Megascops asio, 94, 95.
bendirei, 94, 95.
cineraceus, 94, 95.
cooperi, 95.
trichopsis, 94, 95.
vinaceus, 94, 95.
xantusi, sp. nov., 93.
Melanerpes angustifrons, 103, 105, 205.
formicivorus, 107.
bairdi, 107.
uropygialis, 107, 109.
melania, Oceanodroma, 32.
melanocephala, Arenaria, 74.
Zamelodia, 158.
melanocorys, Calamospiza, 163.
melanoleucus, Aëronautes, 112.
Totanus, 65.
Melopelia leucoptera, 79.
Melospiza lincolnii, 149, 150.
striata, 150.
Merganser, Hooded, 41.
Red-breasted, 41, 42.
serrator, 41.
Merlin, Richardson's, 90.
Merula confinis, 216.
migratoria, 215.
propinqua, 215.
mesoleucus, Pipilo fuscus, 152.
Mexican Ground Dove, 79.
mexicanus, Accipiter, 82.
Astragalinus psaltria, 136.
Falco, 89.
Himantopus, 60.
Pyrocephalus rubineus, 123.
Micropallas graysoni, 99.
whitneyi, 99.
microsoma, Halocyptena, 31.
migratoria, Merula, 215.
Mimus polyglottos, 195.
leucopterus, 194.
minor, Turdus, 214.
minutilla, Tringa, 62, 63.
Mniotilta varia, 178.
Mockingbird, Western, 5, 194.
Molothrus ater, 126.
obscurus, 126.
montanus, Oroscoptes, 194.
morcomi, Dendroica aestiva, 179, 180.
morinella, Arenaria, 74.
Motacilla ocularis, 192.
Mountain Towhee, 10, 150.
Mourning Dove, 78.
Murrelet, Craveri's, 6, 16.
Xantus's, 15.
Myiarchus cinerascens, 118.
pertinax, 117.
pertinax, 118.

Naevius, Nycticorax nycticorax, 54.
nana, Hylocichla guttata, 211, 212, 214.
nanus, Turdus, 213, 214.
Narrow-fronted Woodpecker, 10.
nebouxii, Sula, 35.
Nectris amaurosoma, 29.
neglecta, Sturnella magna, 128.
nelsoni, Icterus cucullatus, 131.
Nettion carolinensis, 43.
neutralis, Agelaius phoeniceus, 127.
Night Heron, Black-crowned, 54.
Yellow-crowned, 55.
Nighthawk, Texan, 110, 164.
nigrescens, Dendroica, 183.
nigricans, Sayornis, 119.
nitens, Phainopepla, 171.
nitidus, Phalaenoptilus nuttallii, 109.
nivosa, Aegialitis, 64, 72.
Northern Phalarope, 58, 59.
Violet-green Swallow, 167.
notabilis, Seiurus noveboracensis, 184.
noveboracensis, Seiurus, 185.
nuchalis, Sphyrapicus varius, 104.
Numenius hudsonicus, 70.
longirostris, 70.
Nuthatch, 10.
St. Lucas, 10, 203.
nuttalli, Zonotrichia leucophrys, 143, 144.
nuttallii, Phalaenoptilus, 110.
Nycticorax nycticorax naevius, 54.
violaceus, 55.

Oberholser's Yellow-throat, 186.
obscura, Aphelocoma californica, 125.
Polioptila caerulea, 209.
obscurus, Empidonax, 123.
Molothrus ater, 126.
obsoletus, Rallus, 56.
Salpinctes, 199.
occidentalis, Coccyzus americanus, 101.
Ereunetes, 63.
Geothlypis trichas, 187.
Larus, 20.
Oceanodroma melania, 32.
townsendi, 33.
ocularis, Motacilla, 192.
oedica, Hylocichla ustulata, 211.
opisthomelas, Puffinus, 26, 29.
Orange-crowned Warbler, 5, 178.
Oregon Vesper Sparrow, 137.
Oreortyx pictus plumiferus, 76.
Oreospiza chlorura, 154.
Oriole, Arizona Hooded, 131.
Scott's, 128.
Oroscoptes montanus, 194.
Osprey, American, 92.
Owl, American Barn, 92.
Owl, Burrowing, 97.
Dwarf Horned, 10, 96.
Elf, 99.
Hoskins's Pygmy, 10, 98.
Short-eared, 93.
Xantus's Screech, 93.
Oyster-catcher, 69.
Black, 75.
Frazar's, 5, 74.

Pacific Godwit, 64.
pacifica, Amphispiza bilineata, 148.
Tringa alpina, 63.
pallescens, Bubo virginianus, 97.
Columbigallina passerina, 79.
palliatus, Haematopus, 75.
pallida, Spizella, 145.
paludicola, Cistothorus palustris, 201, 202.
Pandion haliaëtus carolinensis, 92.
Parabuteo unicinctus harrisi, 82.
parisorum, Icterus, 128.
parkmanii, Troglodytes aëdon, 201.
Parkman's Wren, 201.
Partridge, Valley, 76.
Parus inornatus cineraceus, 204, 206.
griseus, 204, 205.
passerinus, Ammodramus savannarum, 142.
Pectoral Sandpiper, 61.
Pelecanus californicus, 38.
erythrorhynchos, 37.
fuscus, 38.
Pelican, 12.
American White, 37.
California Brown, 7, 36, 38.
penicillatus, Phalacrocorax, 37.
peninsulae, Contopus richardsonii, 120.
Pyrrhuloxia sinuata, 157.
peninsularis, Falco sparverius, 90.
pensilvanicus, Anthus, 193.
perpallidus, Coturniculus, 142.
pertinax, Myiarchus, 118.
cinerascens, 117.
Petrel, 12.
Black, 6, 31, 32.
Least, 6, 31.
Socorro, 31, 33.
Petrochelidon lunifrons, 165.
Peucaea ruficeps boucardi, 149.
Pewee, Black, 5.
Large-billed Wood, 10, 120.
Phaëthon aethereus, 33.
Phainopepla, 5, 171.
nitens, 171.
Phalacrocorax cincinnatus, 36.
dilophus albociliatus, 36.
pelagicus resplendens, 37.
penicillatus, 37.

Phalaenoptilus nuttallii, 110.
californicus, 110.
nitidus, 109.
Phalarope, Northern, 58, 59.
Red, 58, 59.
Wilson's, 59.
Phalaropus lobatus, 58.
philadelphia, Larus, 22.
Phoebe, Black, 119.
Say's, 118.
phoeniceus, Agelaius, 127.
Pied-billed Grebe, 7, 14.
Pigeon Hawk, 89.
Viosca's, 8, 10, 76.
pileolata, Wilsonia pusilla, 191.
Pileolated Warbler, 191.
Pine Siskin, 136.
Pintail, 45.
pinus, Spinus, 136.
Pipilo erythrophthalmus, 151.
fuscus, 152.
albigula, 151.
crissalis, 153, 154.
mesoleucus, 152.
senicula, 153.
maculatus magnirostris, 150.
megalonyx, 151.
Pipit, American, 193.
Red-throated, 193.
Piranga ludoviciana, 163.
Plegadis guarauna, 48.
plesius, Cistothorus palustris, 202.
Plover, 12.
American Golden, 71.
Black-bellied, 5, 6, 70.
Semipalmated, 7, 72.
Snowy, 72.
Wilson's, 5, 7, 73.
plumbea, Polioptila, 210.
Plumbeous Gnatcatcher, 210.
Plumed Quail, 76.
plumiferus, Oreortyx pictus, 76.
podiceps, Podilymbus, 14.
Podilymbus podiceps, 14.
Polioptila caerulea, 209.
obscura, 209.
californica, 210.
plumbea, 210.
Polyborus cheriway, 91.
polyglottos, Mimus, 195.
Pooecetes gramineus affinis, 137.
confinis, 137.
Poor-will, Frosted, 109.
Porzana carolina, 56.
Prairie Falcon, 89.
pratincola, Strix, 92.
Progne subis hesperia, 164, 170.
propinqua, Merula migratoria, 215.
psaltria, Astragalinus, 135, 136.
Psaltriparus grindae, 205.
minimus californicus, 206.
Puffinus auricularis, 28, 31.
cuneatus, 30.
griseus, 29.
knudseni, 30.
opisthomelas, 26, 29.
pulchra, Cyanospiza versicolor, 160.
punctulatus, Catherpes mexicanus, 200.
Purple Martin, Western, 170.
pusillus, Vireo, 176.
Pygmy Owl, Hoskins's, 10, 98.
Pyrocephalus rubineus mexicanus, 123.
Pyrrhuloxia, St. Lucas, 7, 157.
sinuata, 158.
peninsulae, 157.

Quail, Plumed, 76.
Querquedula cyanoptera, 44.
discors, 44.

Rail, 12.
Belding's, 6, 7, 55.
Carolina, 56, 57.
Virginia, 56.
Rallus beldingi, 55.
obsoletus, 56.
virginianus, 56.
Raven, American, 5, 125.
Recurvirostra americana, 59.
Red-backed Sandpiper, 63.
-billed Tropic Bird, 6, 33.
-breasted Merganser, 41, 42.
Snipe, 61.
Teal, 44.
-naped Sapsucker, 104.
Phalarope, 58, 59.
-tail, Western, 83.
-throated Pipit, 193.
-wing, Sonoran, 127.
Reddish Egret, 7, 52, 53.
Redhead, 45.
Redstart, American, 192.
Regulus calendula, 208.
grinnelli, 208.
resplendens, Phalacrocorax pelagicus, 37.
richardsonii, Contopus, 120.
Falco columbarius, 90.
Richardson's Merlin, 90.
Ring-billed Gull, 21.
-necked Duck, 46.
riparia, Clivicola, 170.
Riparia, 170.
Riparia riparia, 170.
Road-runner, 101.

Robin, St. Lucas, 8, 10, 216.
Western, 215.
Rock Wren, 199.
rostratus, Ammodramus, 138, 140, 141.
Rough-Leg, Ferruginous, 88.
-legged Hawk, Ferruginous, 10.
-winged Swallow, 170.
Royal Tern, 7, 24.
ruber, Sphyrapicus, 105.
ruberrimus, Carpodacus mexicanus, 133.
rubiginosa, Dendroica aestiva, 180, 181.
Ruby-crowned Kinglet, 208.
Ruddy Duck, 46.
Turnstone, 74.
rufescens, Ardea, 52.
ruficeps, Aimophila, 149.
ruficollis, Ardea tricolor, 52.
rufinucha, Aegialitis wilsonia, 73.
Russet-backed Thrush, 210.
ruticilla, Setophaga, 192.

Sage Thrasher, 194.
St. Lucas Cactus Wren, 7, 197.
Cardinal, 7, 155.
Flycatcher, 7, 10, 121.
House Finch, 7, 133.
Nuthatch, 10, 203.
Pyrrhuloxia, 7, 157.
Robin, 8, 10, 216.
Solitary Vireo, 174.
Sparrow, 139.
Hawk, 5, 90.
Swallow, 7, 10, 167.
Thrasher, 7, 195.
Towhee, 7, 151.
Woodpecker, 7, 102.
Salpinctes obsoletus, 199.
San Benito Sparrow, 5, 141.
sanctorum, Ammodramus, 141.
rostratus, 140, 141.
Sanderling, 64.
Sandpiper, 12
Baird's, 62.
Least, 5, 62.
Pectoral, 61.
Red-backed, 63.
Solitary, 67.
Spotted, 5, 69.
Western, 63.
Solitary, 67.
Sapsucker, Red-naped, 104.
saturatus, Bubo virginianus, 96.
savanna, Ammodramus sandwichensis, 138.
Savanna Sparrow, Western, 137.
saya, Sayornis, 118.
Sayornis nigricans, 119.
semiatra, 119.
Sayornis saya, 118.
Say's Phoebe, 118.
Scaup Duck, Lesser, 46.
scirpicola, Geothlypis trichas, 186, 187.
Scolecophagus cyanocephalus, 133.
scolopaceus, Macrorhamphus, 61.
scottii, Aimophila ruficeps, 149.
Scott's Oriole, 128.
Screech Owl, Xantus's, 93.
Seiurus noveboracensis, 185.
notabilis, 184.
Selasphorus alleni, 113.
semiatra, Sayornis nigricans, 119.
semipalmata, Aegialitis, 72.
Symphemia, 68.
Semipalmated Plover, 7, 72.
senicula, Pipilo fuscus, 153.
sequoiensis, Hylocichla guttata, 212.
serrator, Merganser, 41.
serripennis, Stelgidopteryx, 170.
Setophaga ruticilla, 192.
Sharp-shinned Hawk, 5, 81.
Shearwater, 12.
Black-vented, 6, 26, 29.
Dark-bodied, 29.
Townsend's, 28.
Wedge-tailed, 30.
Short-eared Owl, 93.
-winged Grebe, 13, 47.
Shoveller, 45.
Shrike, California, 172.
White-rumped, 172.
sinaloensis, Cardinalis cardinalis, 156.
sinuata, Pyrrhuloxia, 158.
sinuatus, Corvus corax, 125.
sinuosa, Geothlypis trichas, 186, 187.
Siskin, Pine, 136.
Sitta carolinensis aculeata, 203.
lagunae, 203.
slevini, Hylocichla aonalaschkae, 213.
Snipe, Red-breasted, 61.
Wilson's, 60.
Snowy Heron, 51.
Plover, 72.
Socorro Petrel, 31, 33.
socorroensis, Buteo borealis, 83, 85.
solitarius, Helodromas, 67.
Solitary Sandpiper, 67.
Western, 67.
Vireo, St. Lucas, 174.
Sonora Yellow Warbler, 180.
Sonoran Red-wing, 127.
sonorana, Dendroica aestiva, 179, 180.
sonoriensis, Agelaius phoeniceus, 127.
Carpodacus mexicanus, 134.
Sora, 56.
sororia, Aimophila ruficeps, 148.

Sparrow, Black-chinned, 146.
Brewer's, 5, 145.
Clay-colored, 145.
Desert, 5, 148.
Forbush's, 150.
Intermediate, 144.
Laguna, 148.
Large-billed, 5, 7, 138.
Lincoln's, 149.
Oregon Vesper, 137.
St. Lucas, 139.
San Benito, 5, 141.
Western Chipping, 144.
Grasshopper, 142.
Lark, 142.
Savanna, 137.
White-crowned, 143.
Sparrow Hawk, Desert, 90.
St. Lucas, 5, 90.
sparverius, Falco, 91.
Spatula clypeata, 45.
Speotyto cunicularia hypogaea, 97.
Sphyrapicus ruber, 105.
varius, 106.
nuchalis, 104.
Spinus pinus, 136.
Spiza americana, 162.
Spizella atrogularis, 146.
breweri, 145.
pallida, 145.
socialis arizonae, 144.
Spotted Sandpiper, 5, 69.
Squatarola squatarola, 70.
squatarola, Squatarola, 70.
Steganopus tricolor, 59.
Stelgidopteryx serripennis, 170.
stephensi, Vireo huttoni, 176.
Stephens's Vireo, 176.
Sterna antillarum, 26.
caspia, 23.
elegans, 24.
forsteri, 25.
hirundo, 25.
maxima, 23, 24.
Stilt, Black-necked, 60.
streperus, Chaulelasmus, 42.
striata, Melospiza lincolnii, 150.
strigatus, Chondestes grammacus, 142.
Strix pratincola, 92.
Sturnella magna neglecta, 128.
Sula brewsteri, 34.
leucogastra, 34, 35.
nebouxii, 35.
sula, 35.
sula, Sula, 35.
sulcirostris, Crotophaga, 100.
superbus, Cardinalis cardinalis, 156.
surinamensis, Hydrochelidon nigra, 26.
swainsoni, Vireo gilvus, 174.
Swallow, Bank, 170.
Barn, 166.
Cliff, 165.
Northern Violet-green, 167.
Rough-winged, 170.
St. Lucas, 7, 10, 167.
Tree, 166.
Swift, Vaux's, 111.
White-throated, 112.
Swinhoe's Wagtail, 192.
Symphemia semipalmata, 68.
inornata, 67.

Tachycineta bicolor, 166.
lepida, 167.
thalassina, 167, 169.
brachyptera, subsp. nov., 167.
lepida, 167, 169.
Tanager, Louisiana, 8, 163.
Tantalus loculator, 49.
Tatler, Wandering, 68.
Teal, Blue-winged, 44.
Cinnamon, 44.
Green-winged, 43.
Red-breasted, 44.
Tern, 12.
Black, 26.
Caspian, 7, 23.
Common, 25.
Elegant, 24.
Forster's, 25.
Least, 26.
Royal, 7, 24.
Wilson's, 25.
terrestris, Turdus, 213.
Texan Nighthawk, 110, 164.
texensis, Chordeiles acutipennis, 110.
thalassina, Tachycineta, 167, 169.
Thrasher, Sage, 194.
St. Lucas, 7, 195.
Thrush, Alaska Hermit, 211, 213.
Audubon's Hermit, 212
Dwarf Hermit, 212.
Russet-backed, 210.
Titlark, 6, 193.
Titmouse, 10.
Ashy, 10, 204.
tolmiei, Geothlypis, 185.
Totanus chilensis, 65.
flavipes, 66.
melanoleucus, 65.
frazari, subsp. nov., 65, 66.
Towhee, Green-tailed, 154.

Towhee, Mountain, 10, 150.
St. Lucas, 7, 151.
townsendi, Dendroica, 184.
Oceanodroma, 33.
Townsend's Shearwater, 28.
Warbler, 184.
Toxostoma cinereum, 195.
mearnsi, 197.
Tree Swallow, 166.
trichas, Geothlypis, 187.
trichopsis, Megascops, 94, 95.
tricolor, Agelaius, 127.
Steganopus, 59.
Tringa alpina pacifica, 63.
bairdii, 62.
maculata, 61.
minutilla, 62, 63.
Troglodytes aëdon aztecus, 201.
parkmanii, 201.
Tropic Bird, Red-billed, 6, 33.
Tulé Wren, 201.
Turdus minor, 214.
nanus, 213, 214.
terrestris, 213.
wilsonii, 214.
Turkey Buzzard, 88.
Vulture, 80.
Turnstone, 6.
Ruddy, 74.
Tyrannus verticalis, 117.
vociferans, 116.

Uropygialis, Melanerpes, 107, 109.
ustulata, Hylocichla, 210, 214.

Valley Partridge, 76.
vallicola, Lophortyx californicus, 76, 87.
varia, Mniotilta, 178.
varius, Sphyrapicus, 106.
vauxii, Chaetura, 111.
Vaux's Swift, 111.
velox, Accipiter, 81.
Verdin, 5.
Baird's, 7, 206.
verecunda, Hylocichla aonalaschkae, 213, 214.
Vermilion Flycatcher, 123.
versicolor, Cyanospiza, 161, 162.
verticalis, Tyrannus, 117.
Vesper Sparrow, Oregon, 137.
vicinior, Vireo, 177.
vinaceus, Megascops, 94, 95.
violaceus, Nycticorax, 55.
Violet-green Swallow, Northern, 167.
vioscae, Columba fasciata, 76.
Viosca's Pigeon, 8, 10, 76.
Vireo gilvus, 174.
gilvus swainsoni, 174.
Gray, 177.
huttoni stephensi, 176.
Least, 176.
pusillus, 176.
albatus, 176, 177.
St. Lucas Solitary, 174.
solitarius cassinii, 175.
lucasanus, 174.
Stephens's, 176.
vicinior, 177.
Western Warbling, 174.
virescens, Ardea, 53, 54.
Virginia Rail, 56.
virginianus, Bubo, 96, 97.
Cardinalis, 157.
Rallus, 56.
vocifera, Aegialitis, 71.
vociferans, Tyrannus, 116.
Vulture, Turkey, 80.

Wagtail, Swinhoe's, 192.
Wandering Tattler, 68.
Warbler, Alaskan Yellow, 181.
Audubon's, 182.
Black and White, 178.
-throated Gray, 183.
Lutescent, 179.
Macgillivray's, 185.
Mangrove, 7, 181.
Orange-crowned, 5, 178.
Pileolated, 191.
Sonora Yellow, 180.
Townsend's, 184.
Yellow, 179.
Warbling Vireo, Western, 174.
wardi, Ardea, 50.
Water-Thrush, Grinnell's, 7, 184.
Waxwing, Cedar, 171.
Wedge-tailed Shearwater, 30.
Western Blue Grosbeak, 159.
Chipping Sparrow, 144.
Flycatcher, 120.
Gnatcatcher, 209.
Grasshopper Sparrow, 142.
Gull, 5, 7, 20.
House Wren, 201.
Lark Sparrow, 142.
Marsh Wren, 202.
Martin, 10, 164.
Meadowlark, 128.
Mockingbird, 5, 194.
Purple Martin, 170.
Red-tail, 83.
Robin, 215.
Sandpiper, 63.
Savanna Sparrow, 137.

Western Solitary Sandpiper, 67.
Warbling Vireo, 174.
Willet, 67.
White-crowned Sparrow, 143.
-faced Glossy Ibis, 48.
-fronted Goose, American, 47.
Ibis, 48.
Pelican, American, 37.
-rumped Shrike, 172.
-throated Swift, 112.
-winged Dove, 77, 79.
whitneyi, Micropallas, 99.
Widgeon, American, 43.
Willet, 61.
Western, 67.
wilsonia, Aegialitis, 73.
Wilsonia pusilla pileolata, 191.
wilsonii, Turdus, 214.
Wilson's Phalarope, 59.
Plover, 5, 7, 73.
Snipe, 60.
Tern, 25.
Wood Ibis, 7, 49.
Pewee, Large-billed, 10, 120.
Woodpecker, Gila, 107.
Narrow-fronted, 10.
St. Lucas, 7, 102.
Wren, Dotted Cañon, 200.
Marsh, 12.
Parkman's, 201.
Rock, 199.
St. Lucas Cactus, 7, 197.
Wren, Tulé, 201.
Western House, 201.
Marsh, 202.
wrightii, Empidonax, 123.

Xanthocephalus xanthocephalus, 127.
xanthocephalus, Xanthocephalus, 127.
xantusi, Basilinna, 113.
Megascops, 93.
Xantus's Hummingbird, 5, 7, 8, 10, 113.
Jay, 7, 123.
Murrelet, 15.
Screech Owl, 93.

Yellow-crowned Night Heron, 55.
-headed Blackbird, 127.
-legs, 66.
Gray, 7, 65.
Greater, 66.
-throat, 12.
Belding's, 8, 187.
Oberholser's, 186.
Warbler, 179.
Alaskan, 181.
Sonora, 180.

Zamelodia melanocephala, 158.
Zenaidura macroura, 78.
Zone-tailed Hawk, 87.
Zonotrichia leucophrys, 143, 144.
gambelii, 143, 144.
nuttalli, 143, 144.

Lower California and adjacent Regions.

Slightly modified from the map of Hendges, published by the Bureau of the American Republics, 1900.

The dotted lines define the Cape Region.

CALIFORNIA
ARIZONA
BAJA CALIFORNIA
NORTH DISTRICT
SOUTH DISTRICT
GULF OF CALIFORNIA
SONORA
PACIFIC OCEAN
TUCSON
Yuma
Gila River
Colorado River
Phoenix
Salt River
Tombstone
Bisbee
Silver
Ensenada de Todos Santos
Bahia San Bartolome
Bahia San Sebastian Vizcaino
Bahia de la Magdalena
Bahia Concepcion
Bahia de Los Angeles
Isla Tiburon
Isla Angel de la Guarda
Isla Cedros
Isla Guadalupe
Isla Cerralvo
Isla Espiritu Santo
Isla Partida
Isla Carmen
Isla Coronados
Isla Monserrate
Isla Danzante
Isla Catalina
Isla Santa Margarita
Isla Magdalena
Isla Natividad
Isla San Benito
Isla Asuncion
Isla Cedros
Isla Guadalupe
Isla Tiburon
Isla Angel de la Guarda
Isla Partida
Isla Carmen
Isla Coronados
Isla Monserrate
Isla Danzante
Isla Catalina
Isla Santa Margarita
Isla Magdalena
Isla Natividad
Isla San Benito
Isla Asuncion
LA PAZ
Cape San Lucas
Cape Colnett
Cape Falso
Cape Corso
Cape Lazaro
Cape Tosco
Cape Punta Abreojos
Cape Punta Eugenia
Cape Punta Baja
Cape Punta Rompiente
Cape Punta Santo Tomas
Cape Punta Banda
Cape Punta Salsipuedes
Cape Punta Morro
Cape Punta Negra
Cape Punta Colonet
Cape Punta Descanso
Cape Punta Loreto
Cape Punta Mulege
Cape Punta Concepcion
Cape Punta Pulmo
Cape Punta Arena
Cape Punta Gorda
Cape Punta Blanca
Cape Punta Colorada
Cape Punta Negra
Cape Punta Morro
Cape Punta Salsipuedes
Cape Punta Banda
Cape Punta Santo Tomas
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Cape Punta Monserrate
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Cape Punta Catalina
Cape Punta Santa Margarita
Cape Punta Magdalena
Cape Punta Natividad
Cape Punta San Benito
Cape Punta Asuncion

The following Publications of the Museum of Comparative Zoölogy are in preparation: —

Reports on the Results of Dredging Operations in 1877, 1878, 1879, and 1880, in charge of ALEXANDER AGASSIZ, by the U. S. Coast Survey Steamer "Blake," as follows: —

E. EHLERS. The Annelids of the "Blake."
C. HARTLAUB. The Comatulæ of the "Blake," with 15 Plates.
H. LUDWIG. The Genus Pentacrinus.
A. MILNE EDWARDS and E. L. BOUVIER. The Crustacea of the "Blake."
A. E. VERRILL. The Alcyonaria of the "Blake."

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of ALEXANDER AGASSIZ, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding.

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H. V. WILSON. The Sponges.
W. McM. WOODWORTH. The Nemerteans.
" The Annelids.

PUBLICATIONS

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

AT HARVARD COLLEGE.

There have been published of the Bulletin Vols. I. to XXXVII.; of the Memoirs, Vols. I. to XXIV.

Vols. XXXVIII., XXXIX., XL., and XLI. of the Bulletin, and Vols. XXV., XXVI., and XXVII. of the Memoirs, are now in course of publication.

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Reports on the Results of the Expedition of 1891 of the U. S. Fish Commission Steamer "Albatross," Lieut. Commander Z. L. Tanner, U. S. N., Commanding, in charge of Alexander Agassiz.

Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of Alexander Agassiz, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding.

Contributions from the Zoölogical Laboratory, Professor E. L. Mark, Director.

Contributions from the Geological Laboratory, in charge of Professor N. S. Shaler.

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VOL. XLI. NO. 2.

THE CHIMAEROIDS (CHISMOPNEA RAF., 1815; HOLOCEPHALA MÜLL., 1834), ESPECIALLY RHINOCHIMAERA AND ITS ALLIES.

BY SAMUEL GARMAN.

WITH FIFTEEN PLATES.

CAMBRIDGE, MASS., U. S. A.:
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No. 2. — *The Chimaeroids* (*Chismopnea* Raf., 1815; *Holocephala* Müll., 1834), *especially Rhinochimaera and its Allies.* By Samuel Garman.

There are few of the marine animals that on account of structure and relationships to other forms living and extinct have as great interest for zoölogists and palaeontologists as the Chimaeroids. Their line of descent extends to Devonian times and away beyond and back to a meeting with that of the Plagiostomia near the point at which the latter separated from the bony fishes. That the line has been well traced for a long distance through the fossils only makes it the more interesting. Item after item of information relating to the group has been carefully gathered, discussed, and placed on record, but the advances among the recent have been very slow, and those among the fossils, though in some ways much more extensive, have left much to be desired. The type species of Chimaera and Callorhynchus have been known since the establishment of these genera by Linné and Gronow, in 1754. More recently other species have been added to each of them. A most important addition to the knowledge of the group dates from the capture of the types of the genus Harriotta, by the United States Fish Commission, and their description by Messrs. Goode and Bean, in 1894, and a little later another was made by the discovery of a Japanese species, by Professor Mitsukuri, in 1895, which was placed in the same genus, named but not described. The importance of the species from Japan was not recognized for some years, until Dr. Alexander Agassiz, returning from one of his explorations of the Coral Islands, saw and purchased a second specimen from a dealer in Tokyo. Dissection of this specimen supplies the reason for existence of this paper; it brings to light a number of interesting details concerning Chimaeroids, and some which pertain to other forms than that directly under consideration. The following are among the results and conclusions, brought prominently forward at this moment, that appear to be most worthy of attention.

The species, Rhinochimaera pacifica, is described and figured with details of skeletal and other anatomy.

A new genus, Rhinochimaera, is established, also a new family, Rhinochimaeridae, to contain Rhinochimaera and Harriotta, and still another new family, Callorhynchidae, to include the genus Callorhynchus.

The body of Rhinochimaera is typical of that of most Chimaeroids; the proboscis is an ancestral feature that has become much reduced in Callorhynchus and is obsolescent in Chimaera.

The rostral cartilages are articulated to the skull and are not prolongations of it, as in certain Platosomia, Raiae, or in Antacea, Sharks, on some of which the rostral cartilages resemble a tripod, but with two legs superior, unlike Chimaeroids.

The nearest approach, so far as noted, of recent Chimaeroids to Plagiostomes, as attested by brains, dorsal spines, etc., is made toward Squalus and Heterodontus of the Antacea.

The teeth of Rhinochimaera resemble the embryonic and ancestral more than those of the other recent genera of Chimaeriforms; they are cutters rather than grinders, and probably are most like those of the Myriacanths and Rhyncodonts among the fossils.

In Harriotta the tritors are grouped like the grinders of certain Placodont fishes more than those of other Chimaeroids.

The tritors originated on the horny dental plate through stress or impact, much as the molars of Placodonts and others were originated from the indurated membranes of the jaws, or their hardened papillae.

To judge from the dentition alone, the extinct Myriacanths were nearer the ancestral stem on which farther back the four-toothed forms Rhynchodus and Rhamphodus may likewise be found.

The brain of Rhinochimaera, like its rostrum, is nearer that of Callorhynchus than to that of Chimaera, reduction in the head of the last having brought the hemispheres and the olfactory lobes in contact.

The notochord of Rhinochimaera is provided with rings like that of Chimaera; it is unlike that of Callorhynchus, which shows no rings and is probably the more primitive type.

The males of living Chimaeroids are subject to a certain metamorphosis in acquiring secondary sexual characters as they become mature; a frontal tenaculum and two ventral tenacula are developed as the claspers approach functional maturity.

A more primitive form of the frontal tenaculum is that of the extinct form Squaloraia; in its inception the organ was merely a transverse fold of the skin on the forehead.

The frontal tenaculum, being a sexual character, is not to be homolo-

gized with dorsal spines, or with the illicia of the Lophioids, though treated as if of similar nature by early authorities.

The function of the tenacula below the bases of the ventral fins is somewhat like that of the series of erectile hooks on the upper sides of the pectorals of some Platosomia, Raia ocellata, for instance.

The lateral canal systems of Rhinochimaera and Harriotta are made up of pseudotubules, tubes narrowly slit outwardly; that of Callorhynchus consists of tubes, and that of Chimaera is a system of grooves.

The spiral intestine of Rhinochimaera is similar to that of the other living Chimaeroids.

The first dorsal is short, erectile, and has a spine and radials in all members of this group.

The second dorsal is long in the Chimaeridae, of medium length in the Rhinochimaeridae, and short in the Callorhynchidae.

The armature of the supracaudal fin is peculiar to Rhinochimaera.

The claspers of Rhinochimaera and Harriotta resemble one another; except in being simple, they are unlike those of Callorhynchus; in those of the Chimaeridae the cartilages are trifid.

The claspers, intromittent organs, are possessed by both Plagiostomes and Chimaeroids; the tenacula of the latter are peculiar to them.

The position of the clasper of the Chimaeroid is rather above the edge of the ventral; that of the Plagiostome is below it.

Certain peculiarities of the Chimaeroids, especially of skull and brain, are perhaps best accounted for by supposing the group to have been derived primarily from a short-snouted and short-faced form, acquisition of the long snout and the prognathous condition of the skull afterward carrying the olfactory lobes and the hemispheres forward and separating them from the balance of the brain and from one another, and in Chimaera a still later loss of the snout and shortening of the anterior part of the skull bringing the lobes and the hemispheres together into a single mass.

Rhinochimaera pacifica.

Plate 1, Fig. 1.

Hariotta pacifica Mitsukuri, 1895, Zoöl. Mag. Tokyo, VII., without description.
Rhinochimaera pacifica Garman, 1901, Proc. N. E. Zoöl. Club, II., 75.

The specimen here described is a fully developed male of about thirty-six inches in length, before a slight loss from the filamentary extremity of the tail. On account of the figure some of the details of shape need not be dwelt upon

in the text. In a general way the form is that of a Chimaera with a long proboscis from the forehead. The amount of compression in the head and body is not very great; the body cavity is included in the anterior half of the total length; the head is massive, rather longer than the abdominal portion of the body, and has a long tapering rostrum which is subtriangular in cross-section, placed pretty well up on the forehead, flattened and provided with special sensory apparatus on the lower side, depressed and slender forward, and pointed at the end; the caudal region occupies half or more of the total length, is compressed and tapers regularly to a filamentary extremity, is encroached upon by the second dorsal fin, is surmounted in part by a low rudimentary fin, the upper edge of which bears an armature, and is subtended by a longer, deeper, and unarmed subcaudal fin. The skin is soft and smooth; there are four vertical fins and two pairs; the anterior dorsal is erectile and has a strong serrated spine and distinct radials. The length of the head is more than one-fourth, the length of the caudal section is about one-half, the length of the snout is little more than one-sixth, the depth is nearly one-tenth, and the width is nearly one-fifteenth of the total length. The oral portion of the head is prominent; the mouth is similar to that of Chimaera. As in the other recent Chimaeroids, there are three pairs of the teeth, one of palatines, one of vomerines and one of mandibulars, Plate **5**, Figures 1 and 2. Mere dot-like points, to be seen under a lens, on the sharp edges of the teeth, are the only approaches to tritors; they have the appearance of the ends of small pores. By comparison of the tongue figured on Plate **12** with those on Plate **5** and Plate **13**, it will be seen that this organ attains a somewhat greater development in the present form. The eye is large and is placed on the side of the head in such position as to command views outward, forward, and upward without hindrance. On the first and the second arches there are five well-developed gillrakers, with several rudiments; they are short, hardly one-sixth as long as the eye, and are acuminate; on the third arch and the fourth all of the rakers are more or less rudimentary. This individual, being a mature male, possesses a frontal tenaculum, armed with about ten series of hooked spines, above the front edge of the orbit on the forehead. The back is nearly straight. The dorsal spine is situated above the bases of the pectorals: it is strong, has a narrow ridge in front, and is smooth on all edges with the exception of slight roughnesses on the hinder angles near the outer end, possible indications of sharp hooks on young individuals. Four rays appear in the first dorsal behind the spine, and a low membrane connects this fin with the second dorsal, which last rises gradually to less than half the height of the first and terminates abruptly more than twice the length of the eye forward from the origin of the upper fin of the tail. The upper caudal fin rises gradually, and, descending even more so, terminates more than twice the length of the orbit forward of the end of the tail, on this specimen. On the upper edge of this fin, which is somewhat rudimentary, there is a peculiar arrangement of small spines, Plate **4**, Figure 2; a pair of larger ones are placed side by side and directed laterally, and behind each pair, between it and the next, there is a couple (1–3) of smaller spines placed longi-

tudinally and pointing upward, forward, or backward. This armature continues to within a short distance in front of the end of the tail, and behind its point of disappearance there is a low ridge to the extremity. The subcaudal fin is much deeper than the supracaudal; it originates below the termination of the second dorsal, rises gradually, becomes deepest in the anterior half of the length, then slowly tapers to the caudal filament. The pectoral fins are long, more than two and one-half times as long as wide, and when extended the sharp outer angle reaches to the bases of the ventrals. The length of the ventral fin is about equal to the height of the first dorsal and the width is less than half of the length: the claspers are simple, slender, nearly four times as long as the eye, subround in trans-section, very muscular near the base, enlarged into an oblong rounded spine-covered bulb at the extremity, and jointed so as to be turned directly forward, Plate **3**, Figures **1**, 4 and 5; each ventral tenaculum has three strong hooks on its inner edge. There is no distinct anal fin.

On the sides and the lower surfaces the color is a light olivaceous or plumbeous more or less silvered; toward the back and on the tail it is more brown; the fins are darker to blackish outward.

Total length, 35.5; snout, 6.5; snout to dorsal spine, 10.8; snout to second dorsal fin, 15.4; snout to upper caudal armature, 24.4; snout to vent, 17.2; depth, 3.5; length of pectoral fin, 6 5; length of ventral fin, 3 5: snout to anal, 20; snout to pectoral fin, 10.3; snout to eye, 8.3; length of orbit, 0.8; length of dorsal spine, 3.6; length of clasper, 3.1; width of gill aperture, 1 1: width of body or head, 2.4; length of cephalic tenaculum, 0.6; length of head, 9.5; depth of body at axil of ventral fin, 2.2; width above axil of ventral fin, 1.1: and length of caudal section (probably after a slight loss), 17.5 inches.

Specimen described from Tokyo, Japan. Other specimens are said to have been purchased in the same market that were caught near by, in water of two hundred fathoms or more in depth, off Misaki.

Lateral Canal System, Plate **1**, Figure 1; Plate **2**; Plate **4**, Figure 3.

The structures and functions of these canals are similar in the Chimaeroids and the Plagiostomia. The excessive differentiations of structure and the complexities of function obtaining on some of the deep-sea bony fishes do not occur on either of them. In the distribution of the canals, however, there are certain peculiarities in all the members of the group that distinguish the Chimaeroids from both Plagiostomes and bony fishes. A description of the system on Rhinochimaera applies fairly well to all the genera of its kindred, for even in the strange form of Callorhynchus one has but to apply the foliation of the snout to the lower side of the rostrum to make the similarity at once apparent. For comparisons and for nomenclature see this Bulletin, Vol. XVII., No. 2, Garman, 1888, On the Lateral Canal System of the Plagiostomia and Holocephala, Plates I. to LIII., and Mem. Mus. Comp. Zoöl., Vol. XXIV., Garman, 1899, Deep Sea Fishes, Plates LXIX. to LXXXIV. On the Chimaeroid the aural branch of the system, which crosses the back of the head, lies in front of the orbital,

which latter passes down behind the eye, and connects directly with the cranial; this places the short occipital behind the aural, and consequently the orbital does not meet the cranial. On Plagiostomes and on bony fishes the occipital is in front of the aural, and the orbital meets the cranial at some distance in front of the aural. In one case the occipital can be regarded as a portion of the lateral line, in the others it must be considered as a continuation of the cranial branch. On Chimaeroids again, the mouth being forward from the eye, the angular branch passes down and forward from the orbital to meet the narial, but on Plagiostomia having the mouth backward from the eye the angular passes backward. In the Rhinochimaeridae the canals have the appearance of tubes that have been longitudinally slit on the outer side, Plate **4**, Figure 3; they are thus intermediates between the more open grooves of the Chimaeridae, and the tubes of the Callorhynchidae. As is seen on Rhinochimaera, Plate **1**, Figure 1, the jugular meets the orbital, and the angular descends from the orbital and passes downward and toward the front to meet the nasal and the oral: the same is true in Harriotta, Plate **2**, Figure 4. In Chimaera the oral meets the angular, Lat. Canal Syst., Plate II., Figures 3 and 4, but on Callorhynchus it starts from the orbital, l. c., Plates III. and IV., Figure 1. On both Rhinochimaeridae and Callorhynchidae the jugular starts from the orbital; on Chimaeridae it starts either from the angular or the orbital. On the individual from which the description of Rhinochimaera is taken, the aural is not continuous across the head, but is in two parts, which pass one another and overlap for some distance. Plate **2**, Figure 1: the cranials and rostrals pass from the junction of aurals and occipitals forward to the end of the snout, bending toward one another between the eyes; the subrostral lies at the side of the snout and meets the orbital below the middle of the orbit; the occipital passes down and backward from the aural: the orbital goes down and forward from the occipital; and the angular goes down, then bends forward to the oral and the nasal. The jugular meets the orbital, and, like the oral, is more or less broken and disconnected behind the symphysis. On this specimen the narials of the two sides are continuous across the lower side of the snout, forming the only complete connection, except the neural, between the system of the right side and that of the left. On specimens of Harriotta the narials appeared somewhat broken at this point, orals and angulars also were broken, but the aurals were undivided, Plate **2**, Figures 3 and 5. On both Rhinochimaera and Harriotta the line makes some descent backward from aural and cranial to orbital and thence proceeds nearly straight back to a point below the origin of the supracaudal fin, where it turns toward the upper edge of the subcaudal fin and continues along the lower edge of the side on the muscular portion to the end of the tail. The close general correspondence of the lateral systems of these genera is very evident if the figures of Rhinochimaera pacifica, Plate **1**, Figure 1, and Plate **2**, Figures 1 and 2, are placed side by side with those of Harriotta raleighana, Plate **2**, Figures 3 to 5.

The Claspers, Plate 3, Figures 1, 4, 5.

The claspers of Rhinochimaera are similar in construction to those of Callorhynchus; they differ greatly from those of Chimaera. They have the appearance of being formed of a narrow strip of cartilage rolled into a tube, then twisted so that the joined edges, indicated externally by a shallow groove, are given a complete turn in the length of each clasper. In the distal half each is round, hard, and slender; proximally each is much thickened by the strong muscles that surround its base and include the receptaculum, the opening to which is hardly visible on the outside. At the free end, the tube from the receptaculum opens in the cleft extending from the interior of a small, fleshy, spine-covered bulb. As the claspers lie at rest, the clefts open outward from one another; but when in function the claspers are turned down and forward with a slight rolling motion, Plate 3, Figure 4, making the clefts to open inward, more toward one another, and the spine-covered surfaces to be carried outward so as not to come in contact. The spines at the extremities are erectile and hook toward the bases of the organs, thus forming effective holders. Turning the claspers down and forward from the body appears to open the mouths of the receptacula and bring them near the openings of the spermatic ducts. For comparison with those of Rhinochimaera the intromittent organs of a skate, Raia laevis, are figured on Plate 4, Figure 5; they are turned toward the head as in function, without indicating the peculiar structures of the cartilages near the outer ends. The position of the clasper with regard to the ventral fin may be a matter of no great importance, yet it adds to the number of peculiarities distinguishing recent Chimaeroids from the Plagiostomes. The clasper of the Chimaeroid, Plate 3, Figures 1 and 2, occupies a position above the edge of the ventral fin, in a measure between the fin and the body; that of the Plagiostome (Plate 3, Figure 3, a young specimen of Carcharinus terraenovae) lies below the edge of the fin, which extends between the clasper and the body.

The Skull, Plate 1, Fig. 2.

In the skull of Rhinochimaera pacifica there is little or no departure from the general type of Chimaeroid skull. The shapes, as outlined, either from above, below, or from the side, may be described in similar terms, and the minor differences are not much greater than are to be seen in the different species of Chimaerae, or even than those obtaining in the different stages of an individual of a species of Callorhynchus. The parietal region is broader than that of Chimaera monstrosa, and narrower than that of Callorhynchus callorhynchus: the frontal region is thicker, wider, and rounder, and does not form a blade-like crest as in Callorhynchus. The facial portion, oral and olfactory section, is more produced than that of Chimaera monstrosa; in this respect it more resembles that of Callorhynchus callorhynchus, in which the narial portion of the skull is much farther forward from the eye than in Chimaera monstrosa, Plate 11. In the young of Callorhynchus callorhynchus,

Plate 10, and in the young of other Chimaeroids the facial region of the skull is shorter than in the adult.

Whether a distinct rostral prolongation is developed or not, the rostral cartilages are similar in all the genera of recent Chimaeroids. The upper rostral cartilage of Rhinochimaera rests on the frontal crest, about midway from the orbital to the narial section, and has a more robust development than on any other of the known Chimaeroids, Plate 1, Figure 2. On Chimaera colliei the point of attachment of this cartilage is about the same, but on Chimaera monstrosa, Plate 11, it is higher on the forehead, and on Callorhynchus callorhynchus it is much nearer the nasal sacs. Though Plate 10 was drawn from a very young specimen, which had not attained the great facial prolongation of individuals of the same species at greater age, it shows the lower rostral cartilages with a proportional development approaching that seen in Rhinochimaera, Plate 1. As shown on Plate 11, in Chimaera monstrosa, and in other species of the same genus, the lower or subrostral cartilages are much dwarfed in size, as also is the case with the upper or suprarostral, though in much less degree. The fact that these cartilages are present and so well developed in the species of Chimaera, in the absence of a rostrum, suggests that a rostrum existed in ancestral forms and has become obsolete. The three rostral cartilages are present, in varying degrees of perfection, on each genus of the Chimaeroids. The bases of these cartilages are attached to the skull by ligament in such a way as to admit of considerable movement of the distal extremities up and down. On Chimaera monstrosa, Plate 11, the suprarostral cartilage presents the appearance of having originally been attached near the nasal capsules, as in Callorhynchus, and of having the basal portion, for a short distance, brought back against and fused with the frontal region of the skull; the ligamentous attachment, however, is at the base of the free portion.

The labial cartilages, present on all the genera, are the same in numbers and positions, but vary greatly in size. They have been worked out in Chimaera and Callorhynchus by Müller. On Rhinochimaera the lower labial cartilages — that is, the larger ones (called by Müller the unterer unpaarer Lippenknorpel in Callorhynchus, but actually paired in this genus as in the other genera) — are smaller than those of Callorhynchus callorhynchus, Plate 10, and larger than those of Chimaera monstrosa, Plate 11, said to be absent by Müller. By some authorities the remnants of the intermaxillaries and the maxillaries are to be found in the superior labial cartilages. In all of the genera examined there is a pair of lower labial cartilages. This pair is closely bound together in large specimens of species of Callorhynchus, but in young individuals the two are distinct, and in very young ones of Callorhynchus callorhynchus there appears to be an additional pair of slender bars of cartilage crossing immediately in front of the large ones. These are distinctly shown on Plate 10; on later stages they have apparently fused with the larger ones behind them. The excessive development of the chin cartilages, the unterer unpaarer Lippenknorpel of Müller, in Callorhynchus is no doubt connected with feeding habits which necessitate grubbing or picking food off the rocks or out of the sands.

Branchial Skeleton, Plates **12**, **13**.

In general the branchial skeleton of Chimaeroids does not reach so great a degree of perfection as that of the Plagiostome. This is especially evident in the basibranchials, copulae, which in all the species of Chimaeroids are more or less undeveloped, some of them being mere lumps of cartilage in the tissues attached but remotely to the hypo- and cerato-branchials. A marked contrast in these respects is to be seen on comparison of the species figured on Plates **12** and **13** with such a shark as Chlamydoselachus anguineus, one of the lowest of its order, possessing the greatest degree of perfection in the branchial skeleton, in which basibranchials and hypobranchials are fully developed and intimately connected. On the other hand, the epibranchials of Chimaeroids are commonly better developed than those of the Plagiostomia.

The branchial cartilages of Rhinochimaera pacifica, Plate **12**, are typical of its entire group. Such differences as there are lie mainly in the inferior connections among the copulae. With exception of the hindmost one, the basibranchial copulae are more remotely connected with the hypobranchials than is the case in the sharks; they are rounded lumps or disks of cartilage which do not form close articulations. In the branchial cartilages of this species, Plate **12**, the three copulae between the first basibranchial and the fifth are represented by two pairs of small lumps of cartilage and a larger odd one, the connections of all of which are ligamentous and remote. The glossohyal is wedge-shaped and does not entirely separate the basihyals, as in case of Callorhynchus callorhynchus, Plate **13**, Figure 3; it differs also from that species in that it is produced forward into the tongue. The hindmost copula is broad anteriorly; in the posterior third it tapers to a sharp point; it is shaped much like that of species of Chimaera, Plate **13**, Figures 1 and 2, and is not so narrow and slender as that of Callorhynchus on the same plate, Figure 3. Apparently there is considerable individual variation to be considered in connection with all the Chimaeroids, especially in regard to the basibranchials. The first two and the last one of the copulae appear to be regularly present, but between these there are a couple which in cases are present as pairs, in others as single lumps. Instead of the single copular lumps present in Callorhynchus callorhynchus, Rhinochimaera pacifica has two pairs, Chimaera monstrosa has a pair and a single large shield preceded by a small pair, and Chimaera colliei has a pair and a single large shield followed by a pair, while the shield or lump preceding the hindmost has a pair of small cartilages in front of it and another pair behind it, Plate **13**, Figure 2. Among other variations obtaining among the species, that of the glossohyal is noted in connection with the tongue, and those of the epibranchials from elongate and narrow in Rhinochimaera, Plate **12**, Figure 2, to short and broad in Callorhynchus callorhynchus, Plate **13**, Figure 3, are readily to be seen on examination of the mentioned figures.

Tongue, Plates **12** and **13**.

The tongue of Rhinochimaera is larger than that of either of the other species dissected; it is prominent, free from the floor of the mouth, and is well supported by a forward prolongation of the glossohyal cartilage. At the forward extremity it is truncate; the upper surfaces are covered with papillae, Plate **12**. In both of the species of Chimaera dissected the tongue is seen to be much smaller, sharper in front, and to have much less of the glossohyal within it, Plate **13**, Figures 1 and 2. The tongue of Callorhynchus callorhynchus, Plate **13**, Figure 3, is greatly reduced or quite rudimentary, and the glossohyal is not produced into it as in the other forms described. From the shape of the tongue of Harriotta raleighana, it is evident that the glossohyal is produced into it; the skin of the organ is peculiarly thickened and folded on its upper surface, Plate **5**, Figure 5, a consequence probably of rough contact and severe pressure by the hard portions of the food that has established the tritors on the teeth. The tongue of Harriotta is markedly different on the surface from that of either of the other genera, as is sufficiently obvious on comparison with the tongues figured on Plates **12** and **13**, all of which are furnished with numerous papillae.

Teeth, Plates **5**, **6**, **7**.

In all the known recent Chimaeroids the individual possesses three pairs of teeth, vomerines, palatines, and mandibulars, one pair of each; that is, two pairs of upper and one pair of lower teeth. Some of the fossil forms appear to have had a greater number, and some of the earliest of the extinct types apparently had a single pair of lower opposed to a single pair of upper teeth. Rhynchodus of the Corniferous and Hamilton limestones, Devonian, described by Newberry from Ohio, is said to be limited to the two pairs, vomerines and mandibulars, so also is Rhamphodus of Jaekel, from the Upper Devonian. These genera are of some interest in connection with this writing because their tooth-characters are in certain respects similar to those of Rhinochimaera, which among recent species possesses the most primitive features of dentition. Of living forms the resemblances in the outlines of the teeth are closer than in their details of structure. While the differences in these last are excessive, they are so distributed among the genera most closely allied in regard to other peculiarities as to prevent use in distinguishing higher groups. This is well illustrated by the teeth of Rhinochimaera and Harriotta, members of a single family, Plate **5**, — instances respectively of the least differentiated and the most specialized in dental structures. An abundance of fossil Chimaeroid teeth suggests that they may have been shed at times by individuals as in Plagiostomia. While a periodical shedding of teeth might be expected from what obtains in other forms, we have as yet no evidence of its existence. The worn condition of the teeth in all specimens at hand points rather toward a continuous growth

from the nourishing tissues and a continuous grinding away on the side toward the mouth cavity.

The mouth of Rhinochimaera is narrower and more pointed than that of its fellows, probably in these respects approaching that of Rhynchodus, or of Rhamphodus, consequently its teeth are narrower and more elongate, Plate **5**, Figures 1 and 2. Altogether the mouth resembles in a measure the beak of a bird of prey; the teeth pass one another like the edges of a pair of shears and in front the vomerines are turned downward in a sharp hook. As the teeth are used entirely for cutting and holding and not for crushing, the stress comes on the sharp edges. The unassisted eye may hardly detect the existence of tritors, but with a lens, where the edges have been somewhat worn away, a series of the extremities of minute calcigerous tubes or pores is to be recognized. The dental plates are thin; in appearance they recall the horny fin rays, though they are not fibrous and are much harder and more brittle. The vomerines are small, convex outwardly, concave inwardly, in contact forward, hooked downward in front of the lower jaws, and feebly notched on the lateral cutting edge by contact with the mandibulars. The palatines are not in contact on the median line of the mouth; each of the pair is long and narrow, concave on the lower surface, blunt on the inner angle, slender and acute posteriorly, straight on the cutting edge except at the forward extremity where it curves upward, and but little bent upward on the inner edge. The mandibulars are longer, more slender, and more pointed than the palatines; they are concave on their upper surfaces, rounded instead of angled inwardly, slightly in contact at the symphysis, very little bent downward at the inner edges, and straight on the cutting edges except when curving down and inward below the vomerines. The only tritoral areas on these teeth are on the cutting edges. Probably the teeth of Rhinochimaera do not vary greatly from the type possessed by the ancestral Chimaeroid, and no doubt the changes undergone in the teeth from very young to adult stages are comparatively slight. The indicated food of this Chimaeroid is crustacean and other life, of considerable depths of the ocean, in which the skeletons have no great degree of hardness.

Harriotta, in most respects the nearest ally of Rhinochimaera, differs radically in regard to the teeth, Plate **5**, Figures 3, 4, 6–9. The dental plates are similar in shape and alike in number, but the tritors, even though they owe their existence to the common causes, stress and impact without perceptible differences in regard to exertion or reception, differ in arrangement from those of any other known Chimaeroid either fossil or recent. The mouth being wider in this genus than in Rhinochimaera and the function depending on the side of the tooth, rather than on the edge, the teeth are broader and much less sharpened at their extremities. The vomerines are of moderate size, somewhat broad, convex outward, concave inward, slightly hooked down in front of the mandibulars, and bear a marginal series of small tritors about nine in number. They are in contact forward, and rather widely separated backward on the median line. The palatines are broad, broadly rounded in front and at the inner angle, more or less sharp posteriorly, and bear more or

less of a prominence, due to the median series of tritors, on the hinder margin. The tritors with some irregularity are distributed in four rows: an outer series at the edge of the tooth of about six rounded tritors, an inner series of about three near the front end, a median series of several parallel with the inner, and a posterior series of about nine broad, short, closely placed tritors extending from the hind margin forward over more than half of the tooth and to some extent resembling the dental series of certain Myliobatidae. The mandibulars are pointed at each end and convexly curved on both outer and inner margins; they bear an outer series of small rounded tritors anteriorly, along about two-thirds of the edge of the tooth, and a median or posterior series of broad, short, closely packed tritors in the hinder three-fifths of the tooth, extending to the hind margin, but not to the posterior extremity. The description immediately foregoing is taken from a specimen that had almost reached maturity, and may be said to fairly represent conditions in an adult, Plate **5**, Figures 3 and 4. The appearance of the teeth in a half-grown specimen are indicated on Plate **5**, Figures 6 and 7. Of such immature specimens the teeth are farther apart and on each tooth the angles are less developed. The tritors also are farther apart and much smaller, some of the hindmost of the wide ones of the inner series being very faintly indicated or altogether absent. Each of the teeth at this stage may be described as shorter, broader, and less angular than the corresponding tooth of the adult. In quite young specimens, such as that of which the teeth are figured on the same plate, Figures 8 and 9, the teeth are less broad and more angular and tritors have not appeared. This in all likelihood represents the condition obtaining in the adult of some ancestor; and this stage is nearer to the permanent type in Rhinochimaera. While there are no tritors on these teeth the positions they finally occupy are already indicated by slight ridges or swellings. A still earlier stage would probably bear teeth on which these ridges would not be developed.

The teeth of very young Callorhynchidae, Plate **6**, Figures 3 and 4, before the tritors appear, are similar to those of a like stage in the Rhinochimaeridae, as represented by Harriotta, Plate **5**, Figures 8 and 9. In later stages the tritors appear on the ridges of palatines and mandibulars and on the cutting edges of the vomerines. This condition appears to be retained by the adult in the type here identified with Callorhynchus smythii Benn., of which the teeth are shown on Plate **6**, Figures 1 and 2. In the other species of the genus, however, the hinder portions of the tritors of the palatine teeth enlarge and fuse, while the forward portions remain as two prongs that may apparently become less extensive toward the front; at the same time the tritor of each mandibular tooth shortens and broadens until in cases somewhat angular or nearly round, as in Callorhynchus milii, Plate **7**, Figures 7 and 8. If in addition to the individual variations those shown to occur in the five species of this genus at hand are also considered, we get a hint of what may be expected among other genera, recent or extinct. Teeth from the various stages of individuals, or of the different species detached and described, as is necessarily done with fossils, might readily lead to multiplication of synonyms for both

species and genera. Three of the known living species are reported from the southwestern coasts of South America; the other two are from Tasmania and the Cape of Good Hope respectively. The younger stages of all are similar. Callorhynchus callorhynchus, Plate 7, Figures 7 to 9, is the species most widely known; in it the tritor of each palatine tooth occupies the greater part of the entire length of the dental plate and sends forward two prongs, the inner of the two being the longer. C. smythii, Plate 6, Figures 1 to 4, as already mentioned, has two distinct parallel tritors on each of the palatine teeth. Both of these forms occur at Valparaiso and Talcahuano. C. tritoris is a new species from the Mejillones; one of its palatines and the vomerines are drawn on Plate 6, Figure 9, where the tritor of the first is seen to be placed far back on the tooth, to be broader than long and hardly notched anteriorly. In C. milii, Plate 6, Figures 7 and 8, the prongs are short; and the tritors have a considerable forward extension on the palatine teeth, while the mandibular tritor is short, rounded, or oblong, and like those of the palatines situated near the posterior edge of the tooth. This is the Tasmanian species first named, described, and figured by Bory, 1823, and later described by Richardson, 1841, under the name C. tasmanius. Callorhynchus capensis, Plate 6, Figures 5 and 6, is marked by very slender and sharp forward extensions of the tritors on both palatine and mandibular teeth; these prongs are elongate and tapering, and the hinder portion of the tritor on the palatine is comparatively short, but on the mandibular teeth the posterior swollen portion of the tritor appears to be longer than that of the tooth above it. This species was described by Duméril, 1865, from specimens secured at the Cape of Good Hope; the figures cited above were drawn from an individual sent by E. L. Layard, Esq., from the same locality. Interest in C. capensis is heightened by the fact that traces of its existence have been found in Cretaceous formations and in a locality which greatly widens its distribution. For the species described by Newton, 1876, in the Quarterly Journal of the Geological Society, p. 326, Vol. 3, and figured and described by the same author, 1878, in the Memoirs of the Geological Survey of the United Kingdom, IV., p. 41, Plate XII., Figures 11 and 12, under the name Callorhynchus hectori, from a fossil palatine tooth found at Amuri Bluff, New Zealand, in a fine conglomerate, believed to be of the age of the Lower Greensand, of the Cretaceous, is not to be separated from C. capensis by any of the characters at present known. This is the earliest positive evidence of the existence of a species of now living Chimaeroid.

The teeth of Chimaerae are more differentiated than those of any other genus of the group. Judging from the dentition, the evolution of Chimaera, as in the reduction of the rostrum, would appear to have gone a stage farther than that of the species of Callorhynchus, and in doing this to have acquired the peculiar laminated structure and the palatine and mandibular tritors on the forward edges of the teeth. The ridges on the inner sides of these teeth may be looked upon as remains of tritors, similar to those of Callorhynchus smythii, Plate 6, Figures 1 and 2. If the rise of Chimaera were to be traced, there would probably be found among its ancestors some with teeth like those of the

very young Callorhynchi, and others of a later period in which tritors, like those of Callorhynchus smythii, were present on the sides of the teeth, and yet others, still later, in which by change of feeding habits the impact had been changed to the front edges of the palatine and the mandibular teeth, where the stress or impact is generally exerted, and where tritors now are in all except very early stages of Chimaera. No better way at present suggests itself to account for the differences in dental structure found in Chimaera and Callorhynchus. On Plate **7**, Figures 1 to 3, the much-worn teeth of an old individual of Chimaera monstrosa are drawn. If the palatine and the mandibular teeth of this species are compared with the same teeth of Callorhynchus smythii, or of the very young of the other species of that genus, or even of the very young of Harriotta, it will be seen that the two lateral ridges of each palatine and the single lateral ridge of each mandibular are in the same positions, but in the later stages of individuals of Chimaera the impact is applied to the forward extremities of the ridges, and in the other genera mentioned it is exerted on their sides. Yet if the account of the dentition of Chimaera is carried no further it will be incomplete and misleading, for as the anterior edges and tritors of the palatine and mandibular plates are ground away by use in aged individuals, the impact is more and more applied to the inner sides of these plates, farther and farther backward. Consequently tritors develop, later in the lives of such individuals, on the sides of calcigerous tubes the extremities of which were the tritors of earlier stages. On the teeth, of a specimen of Chimaera monstrosa more than thirty inches in length, shown on Plate **7**, Figures 1–3, the tritors of the forward edges are the only ones that appear; the ridges of the inner sides are present, but evidently they had not served as grinders and they bear no tritors. On old individuals of Chimaera colliei the tritors of these ridges are prominent and more swollen than those of Callorhynchus smythii, Plate **6**, Figures 1 and 2, and possibly in this or other species of Chimaera they may with greater use become much expanded, or even may become confluent somewhat as in most species of Callorhynchus.

The Viscera. Plate **1**, Figure 2; Plate **4**, Figure 4; Plates **8** and **9**.

The stomach and the inside walls of the body cavity of Rhinochimaera pacifica are blackish; behind the stomach the intestines are lighter in color. The alimentary canal is but little longer than the abdominal cavity; the extent of the difference in the two lengths is indicated in the short transverse portion of the valvular section of the intestine in Plate **1**, Figure **2**. The distinctions between the stomach and the intestine are not particularly well marked, though the walls of the former are darker and are provided on the inside with longitudinal folds or striae, less noticeable when distended, which disappear at the pylorus. The intestine properly so called may be divided into two sections; a longer one containing the first turn of the spiral fold, which originates close behind the stomach at the point of the entrance of the bile duct and as a mere fold of the inner membranes, attached to the wall, gradually makes the turn as

it extends backward to the first valve; and a shorter one beginning at the valve and containing two other valvular constrictions which respectively end the second and the third turns, included between the first valve and the third. On Plate **8**, the intestine is slit open from the pyloric end of the stomach to the vent to show the long, spiral fold, the three muscular and valvular constrictions, and the two short spirals. The portion of the intestine occupied by the longest spiral is more than twice as long as that occupied by the two short ones. The diagrammatic figure 4 of Plate **4**, by means of a dotted line, traces the course taken by the food from the pylorus to the cloaca. The intestines of Callorhynchus callorhynchus, Plate **10**, are in most respects similar to those of Rhinochimaera. The numerous points of resemblance common to those of Chimaera are quite as readily seen. Professor T. J. Parker, 1880, gives a good figure of the spiral folds of Chimaera monstrosa, and describes this portion of the canal in these words, "I found a valve of only three and a half turns, remarkable from the fact that the attached edge did not form a regular spiral, but for a part of its course (namely, during the first turn) formed a slightly sinuous antero-posterior line. In consequence of this, the second compartment of the intestine was fully half as long again as the bursa entiana."

The pancreas of Rhinochimaera is small and elongate; in Figure 2 of Plate **1**, it lies above the intestine immediately behind the left lobe of the liver. As it appeared in the specimen, it was bent backward upon itself, though it may be that normally it is nearly straight. Apparently the spleen is closely bound with it. Above the pancreas, in the figure, and somewhat forward, lies the left testicle, from which the seminal tubes are traced back to the seminal vesicle immediately below the enlarged and lobed hinder extremity of the kidney. The reticulated seminal vesicle, the lobulated kidney, the disk-like testicle, and the complex of seminal ducts are shown more distinctly on Plate **8**. A lower view of these organs appears on Plate **9**, Figure 2, in which the reticulation of the vesicle is not seen.

The liver is drawn in Figure 1 of Plate **9**. It has three lobes, the right one of which is much the longer and is notched at the tip. The gall bladder lies at the right side of the stomach and its duct enters the intestine close behind the stomach at the forward extremity of the spiral fold.

In the bulbus of the heart, Plate **9**, Figure 3, there are two rows of valves, the anterior of which contains three valves, the posterior four, Plate **9**, Figure 4.

Generally the visceral features of Rhinochimaera are in close correspondence with those of the other genera of the group. And this is quite as true of the internal sexual organs as of other internal organs, contrary to what might perhaps have been expected from the great external differences in the claspers. To fully establish this, one has but to compare the present figures of Rhinochimaera with those of the sexual organs of Chimaera monstrosa published by Hyrtl, 1854.

The Brain, Plates **14**, **15**.

The brain of recent Chimaeroids is crowded together posteriorly. The optic and inferior lobes are close to the medulla oblongata and are below the cerebellum. The hemispheres are remote from the optic and inferior lobes, and the connections with them are slender and nerve-like. This shape of the brain, the massing that has taken place backward with the remoteness that obtains forward, is characteristic of the group, so far as known living genera are concerned. A similar crowding of parts of the brain is common among Plagiostomes, but the wide separation of the hemispheres from the optic lobes is peculiar to Chimaeroids. In some genera of the latter the olfactory bulbs are distant from the hemispheres, so also in particular Plagiostomia, but in one genus each hemisphere is closely connected with an olfactory bulb. In these cases either remoteness or the absence of separation of the olfactories serves to distinguish the genera.

The brain of Rhinochimaera pacifica, Plate **14**, from the medulla oblongata forward to the optic lobes differs comparatively little from that of its allies. The posterior mass is similar in shape and in the positions of its component parts. Compared with Chimaera colliei, Plate **15**, Figures 1 and 2, or Callorhynchus milii, Figures 4 and 5 of the same plate, the brain of the present specimen is somewhat smaller in the cerebellum, which does not cover the optic lobes so completely as in the other cases; this deficiency in size, however, may be a feature of the individual and not a character of the species. The nerve-like connections with the hemispheres are more slender in Rhinochimaera than is the case in the other genera. In the distance between hemispheres and olfactory bulbs Rhinochimaera pacifica agrees with Callorhynchus milii, Plate **15**, Figures 4 and 5, though the connections are even more slender than in the latter species and the olfactory bulbs are smaller. Between the hemispheres and the olfactory bulbs in Rhinochimaera the distance is about twice that between the hemispheres and the optic lobes; in Chimaera colliei the distance between olfactories and hemispheres has vanished, while that between the latter and the optic lobes remains. Similar comparisons may be made with the brain of Chimaera monstrosa, which has been worked out by Dr. Wilder and others.

Miscellaneous.

The first mention of the species described above, and a full-grown male of which is figured on Plate **1**, in one-third of its life size, was published by Professor K. Mitsukuri in the Tokyo "Zoölogical Magazine," No. 80, Vol. VII., June, 1895, with an outline sketch on Plate 16 of the same volume. The more important portion of this notice, containing all the description, is reprinted below. By some mistake the outlines were said to be those of a male; they are evidently those of a female. Professor Mitsukuri's remarks are given in his own words: —

"The specimen (male) was bought in the Tōkyō market and is marked as from *Kurihama, Province of Sagami;* there can be no doubt that fishermen of that village caught it in the deep waters (two hundred fathoms or more) contiguous to Misaki. Its unique characters had long been noted by us.

"Unfortunately, I am not yet in possession of the original description of *Hariotta raleighana* by Messrs. Goode and Bean. But the short description, 'the extremely elongate muzzle and the feeble claspers' as well as the comparison of the two figures leave no doubt in my own mind that the two individuals figured belong to the same genus.

"There can also be very little question that they belong to different species. (1) The general shape of the body, (2) the shape and size of the pectoral and ventral fins, (3) the point to which these fins reach when laid back, (4) the shape and disposition of the dorsal fins, (5) distribution of the lateral-line sense-system all seem to point to the specific distinction of the Atlantic and Pacific specimens. The name *Hariotta pacifica* will be most appropriate to the Japanese species."

It would be a matter of some difficulty from this notice, or from the outlines accompanying it, to make a satisfactory identification; it was only by comparison with the type that it might be done. No other description had been published when the specimen of which the present writing treats was brought by Dr. Agassiz from Tokyo. This specimen was dissected from one side and drawings and descriptions were made from the preparations. In the second volume of the Proceedings of the New England Zoölogical Club, page 75, a short preliminary to the present paper was published, in 1901, under the title "Genera and Families of the Chimaeroids," in which it was shown that Professor Mitsukuri's species did not belong to the genus Harriotta, known from the Atlantic, that it represented a new genus, which was then characterized and named Rhinochimaera, and that it with Harriotta constituted a new family, the Rhinochimaeridae, of equal rank with the Chimaeridae and the Callorhynchidae, the last also a new family. The genera and the families were briefly characterized in the preliminary; the characterizations, of greater length and slightly modified by the anatomical studies, are repeated in the present paper. One question raised by the subsequent studies relates to the presence or absence of tritors in Rhinochimaera. On teeth the cutting edges of which have not been worn with hard usage no tritors are visible; but if the extremities of the minute calcigerous tubes to be seen with a lens on the cutting edges of worn teeth are to be accepted as tritors, it is incorrect to say Rhinochimaera has no tritors. Besides the possession of several series of molar-like tritors, the structure of the proboscis in Harriotta, depressed instead of compressed, is a very patent distinction. It was stated in the preliminary that the frontal tenaculum is present on the males of Harriotta, as on males of Rhinochimaera, Chimaera, and Callorhynchus, a fact which was denied in the original diagnosis of that genus. It was added that the frontal tenaculum is only acquired by the young male somewhat late in his existence, about the time he becomes sexually mature and the intromittent "claspers" have approached functional maturity, the advent of the tenaculum coinciding nearly with the beginning of

its period of utility in the congress of the sexes. This was in relation to all the genera of the group. It was overlooked at the time that Günther, in 1887, had reached a similar conclusion in regard to Chimaera. The following is a repetition of his statement.

"The development of the prehensile organ on the upper part of the snout, which is peculiar to the male sex in *Chimaera*, keeps pace with that of the claspers. This organ is visible in our youngest specimen, which evidently was hatched only a few days, as a narrow cartilage of whitish colour entirely covered by the skin, but visible through it. It has not made as great progress in the largest of the young specimens, and therefore does not seem to become detached from the head before the individual attains to sexual maturity."

"Detached from the head" in this may mean either detached from the skull, or attains to partial freedom above the skin, probably the latter.

The frontal tenaculum of the Chimaeroid male is not a modification of a fin ray, as in the Pediculati, but is an accessory sexual organ, in its inception in all probability merely a transverse fold of the skin of the forehead. If it were a modification of a fin spine or radial, it would at the first appear as such, without waiting for sexual maturity, and the embryo would be likely to exhibit traces of its evolution. The frontal tenaculum of Squaloraia, a fossil from the Lower Lias, is to be regarded as an intermediate form between the primary transverse fold and the much-differentiated frontal tenacula of the living Chimaeroids. In the fossil the base of the organ is transverse, and without the simple elongate slender distal portion would sufficiently resemble a transverse fold.

Naturally the higher groups are less clearly outlined in the fossil forms than in the recent, and the farther back attempts are made to distinguish them, along the converging lines to a common ancestry, the less definite the distinctions, until among the earlier they may not be recognized, and the more prominent and numerous the intergradations. The modern tendency of emphasizing divergent features leads to multiplication in the number of families. Woodward, 1891, in the Catalogue of Fossils in the British Museum, Vol. II., distributes the Chimaeroids in four families, Ptyctodontidae, Squaloraiidae, Myriacanthidae, and Chimaeridae. Only the last of these contained species that are now living. If the recent forms are arranged in three families, as in the present writing and in the preliminary, Rhinochimaeridae, Callorhynchidae, and Chimaeridae, the known fossil species will be distributed in five families, by leaving Chimaera pliocenica and C. javana in the Chimaeridae, and placing Callorhynchus hectori in the Callorhynchidae. Undoubtedly future studies will increase the number of families to which even the known fossils are credited. Not much can be done in comparing the recent with the extinct forms, since so little is known of the latter. In most cases the fact of existence has been established only through remnants of the dental apparatus. Of the characterized families the Ptyctodontidae are distinguished by two pairs of teeth, one above and one below, and no spines are known; the Squaloraiidae

have two pairs of teeth above and one pair below, like recent members of the group, but the dorsal spine is absent, the body is depressed, and the frontal tenaculum of the male is elongate styliform, much as the proboscis itself; and the Myriacanthidae have the dorsal spine, have dermal plates on the head, and have two pairs of teeth above and one pair and a single symphyseal tooth below.

A number of features are possessed in common by the living forms, features by which they are closely linked together and by which they are readily distinguished from their nearest allies of the Plagiostomia. The form of body or the general shape, the mandibular suspensorium, the teeth, the lateral system, the lack of shagreen, the erectile first dorsal, the frontal tenaculum, and the ventral tenacula of the males, the wide separation of hemispheres and optic lobes of the brain, the articulation of rostral cartilages; these go to distinguish the Chismopnea from the Plagiostomia. For family characters dependence is placed on the differences in regard to the proboscis, on differences in the structure of the notochord, on differences in the claspers, and on differences in the brain and in the lateral line. The generic and the specific separations are made by differences in the details of tritoral development, by the slighter variations in forms of rostra, or in the structure of claspers, by minor differences in the distribution of the lateral line, in the lengths and shapes of the fins, in colors, etc.

The partial descriptions given below are introduced not as redescriptions but as additions to knowledge of several species, rare or not easily secured, to which references have been made in this paper. The lists of genera and species recognized herein are given under the classification.

Harriotta raleighana.

Plate 2, Figs. 3-5; Plate 4, Fig. 1; Plate 5, Figs. 3-9.

Harriotta raleighana Goode and Bean, 1894, Proc. U. S. Mus., xvii. 472, Plate XIX. Figs. 1–4.

The authorities of the United States National Museum have kindly permitted examination of some of the types from which this genus and species were originally described. In consequence it is possible to add some items to the data already published. Necessarily they are limited to external features, as the specimens could not be dissected.

Specimen 35631, from the North Atlantic (Lat. 39° 12′ N.; Lon. 72° 3′ 30″ W.), at a depth of seven hundred and seven fathoms, is the original of Figs. 1 and 2 on Plate XIX. of Vol. xvii. of the Proceedings of the National Museum, 1894, or of Figs. 37 and 38 on Plate XI. of the Oceanic Ichthyology; it has the following measurements: Total length, 15.5, head, 3.5, snout to vent, 6.5, and snout to mouth, 2.5 inches. The individual is an immature male, too young to have acquired the frontal tenaculum, the ventral tenacula, or the

functional development of the claspers. Its teeth are represented by Figs. 6 and 7 on Plate 5 of the present work. In number of plates and their general outlines these teeth are somewhat like those of a young Chimaera, but in regard to the tritoral surfaces they are very different. On the palatine and the mandibular teeth there are prominent series of tritors, like small rounded molars; on each of the palatines a series appears, the next to the outer, in which the tritors from the third counting backward are broadened into transverse bars, or in which two small tritors, or more, have united into one broad one. On each palatine tooth there are four more or less complete series of the tritors, the outer two or three of which are extended farthest backward. On the outer edge of each mandibular tooth there is a series of about ten of the tritors or cusps, and from the sixth and the seventh two shorter series extend back nearly parallel with the inner edge of the tooth. The vomerine teeth resemble in outline those of Chimaera. Medially in front each hooks downward in a sharp point; laterally from the point the edge lies higher and has three rounded tritors, the hindmost of which forms the hinder edge of the tooth. The claspers are but partially developed; they are short, without spines, stout and muscular at the bases, and in the distal three fifths of the length are slender, cylindrical, and rounded. The groove is distinct to the end. The positions of the ventral tenacula are indicated by the openings, but within the tenacular cavities the organs are quite undeveloped; the spines, of course, are entirely absent. The frontal tenaculum, being of later development than the claspers, is not yet differentiated. Though there appears to be nothing on the sides of the forehead of this individual to distinguish it from a female, if looked at from above the shape of the tenaculum appears to be faintly outlined beneath the skin in its proper position. The dorsal spine has a sharp compressed keel on its front edge; it is triangular in a cross-section; each of the hinder edges turns directly outward at the side, is sharp, and is barbed by sharp teeth hooking toward the base of the spine. At each side of the postorbital space on the crown there are three or four spines in irregular series, and there are four in longitudinal series at each side of the anterior portion of the base of the second dorsal. The upper margin of the third dorsal is like the others and has no such armature as that of Rhinochimaera pacifica (Plate 4, Fig. 2).

The lateral line system resembles that figured on Plate 2, Figs. 3–5, from specimen 39415, but shows individual variation in several points. The upper rostral tract meets the lower at a short distance behind the tip of the snout; they pass into one another at each side of the rostrum. Behind the transverse band of sensory papillae or villi, on the left side of the lower surface of the snout the subrostral line extends back between the suborbital and the prenarial, but does not join with the latter like its fellow of the other side, and the prenarial does not curve out to meet it. Behind the mouth on the chin the line is broken into dashes instead of being entire and transverse; similarly on the throat the transverse line is broken more or less, and is discontinued for a short distance about the middle. Below the middle of the supracaudal fin the lateral

line suddenly drops to the lower edge of the muscular portion of the tail where it continues to the end. The line is similar in structure to that of Rhinochimaera pacifica, as figured on Plate **4**, Fig. 3; it is an open groove with closely-set ribs, which do not quite meet over the cavity. The aural portion of the line bends forward at each side from the lateral, and passing inward turns sharply back to meet its fellow in an acute angle, with the apex backward, from which a short line is extended farther backward toward the dorsal spine.

Specimen 39415 of the National Museum is a female, taken in north latitude 39° 44′ 30″ and west longitude 70° 30′ 45″ at a depth of 1081 fathoms. Its measurements are: total length, 25; length of head, 6; length of snout to mouth, 4; snout to vent, 10.5; snout to dorsal spine, 6.5; snout to anal, 14.25; snout to end of second dorsal, 14.25; length of dorsal spine, 2.75; length of pectoral fin without base, 4.5; length of ventral fin, 2; depth of body between dorsals, 2.75; width of pectoral, 2.75; width of ventral, 1.5; depth of tail, 1.4; width of proboscis, 1.1; depth of orbit, 0.56; length of orbit, 0.75; and length from snout to beginning of the upper fin on the tail, 14.9 inches. The dorsal spine has sharp retrorse denticles on both of the hinder edges, and it has longitudinal striations along its sides. It has a smooth, rather sharp ridge in front, and close behind this in a transverse section it is concave and then slightly convex. The spine has a more prominent anterior ridge and more distinct denticles than on the young, but it is stouter in proportion to the fin on the latter. The tongue is subtriangular, Plate **5**, Figure 5, and it has a peculiar structure, induced by feeding habits in connection with which its most important function may be performed in sorting out the softer tissues from the harder portions or broken shells of the prey. The teeth show a considerable advance from what obtains on 35631, as shown in Plate **5**, Figures 6 and 7. In the outlines the hindmost angles are sharper, from extension backward on the edge of the jaw, and the tritors are broader, longer, and closer together, Plate **5**, Figures 3 and 4. They have expanded until those posteriorly on the median ridge have come to resemble the dental cards of species of Myliobatis to which they suggest a similarity also in feeding habits. Possibly the tritors coalesce and their dividing lines become obliterated in greater ages, for this would be in line with the development traced through 35520 and 35631 to the present specimen; in one the tritors are merely suggested, in another they are well grown but separated, and in still another they are much enlarged and in contact, Plate **5**, Figures 3–9. Each of the vomerine teeth hooks downward in front and has 9 or 10 tritors on its cutting edge. There are three series of tritors on each palatine and but two on each mandibular tooth, Plate **5**, Figures 3 and 4; in this they differ from what obtains on the teeth of 35631, Plate **5**, Figures 6 and 7, a difference which may be due to coalescence of tritors on the older individual.

Number 35520 of the National Museum collection is a young male of about 4.1 inches in length; it was captured at a depth of 991 fathoms in north latitude 39° 37′ 45″ and west longitude 71° 18′ 45″. The specimen was secured near the time of extrusion from the eggshell, and so marks a depth at which

the eggs are laid. It is the type from which Figures 3 and 4 of Plate XIX in the Proceedings of the U. S. National Museum for 1894, and Figures 39 and 40 of the Oceanic Ichthyology were drawn. Apparently it has lost the tip of the snout and the caudal filament. The lower fin of the tail is rather indistinct anteriorly, but evidently it originates some distance farther forward than the upper. Probably the specimen was torn from the egg and mutilated in the dredge. The claspers and the tenacula are undeveloped. The parietal spines and those between the dorsals and between the second dorsal and the fin on the tail are quite prominent. They rise above the level of the head and of the dorsal fins and the dorsal spine, as these last are closely applied to the back; their function appears to be aid in escape from the eggshell and to protect the back and fins at the time and later. The teeth of this individual are figured on Plate **5**, Figures 8 and 9, in four times natural length. They exhibit slight differences in outline from those of older specimens, the principal one of which is a backward extension from the median ridges of palatines and mandibulars; a marked distinction also occurs in the apparent lack of tritors. On each of both palatines and mandibulars there is a symphyseal, a median, and an outer ridge extending to the hind edge of the tooth. Close examination discloses, even in this comparatively undeveloped stage, indications of the molar-like tritors in these ridges, in positions similar to those shown in Figures 6 and 7 of Plate **5**. In each case the inner ridge is formed by the incurved edge of the tooth. The vomerine teeth are less hooked than those on the older specimens, and the tritors are hardly visible.

Callorhynchus milii.

Plate 6, Figures 7, 8; Plate 15, Figures 4, 5.

Callorhynchus milii Bory, 1823, Dict. class. d'Hist. Nat., III., 62, pl. v.
Callorhynchus tasmanius Rich., 1841, Trans. Zoöl. Soc. Lond., III. 174.

A specimen belonging to this species, sent by Mr. W. Robertson from Hobart Town, has a total length of 10.5, a length of head of 4, a length from snout to dorsal spine or to base of pectoral of 4.25, from snout to ventral of 7.4 and to second dorsal of 7.75, a depth of body of 2.5, a length of dorsal spine of 2.75, a length of pectoral of 4, a length of base of second dorsal of 3, a distance from origin of supracaudal to end of base of anal of 0.6, and a length of caudal of 4.75 inches.

The form is compressed, and is massive about the head; seen from the side the outline is very convex and prominent above the front edge of the eye and forward for a short distance. The foliate extremity of the proboscis is broadest near the hind margin, where it is subtruncate and slightly notched. The dorsal spine is situated above the origin of the pectoral; it is compressed and sharp in front. In a trans-section it is concave immediately behind the sharp front edge, then becomes convex; the posterior edges have sharp retrorse ser-

rations. The pectoral reaches behind the origin of the second dorsal, and behind the bases of the ventrals, which last extend little farther backward than the origin of the second dorsal. Hinder margin of ventral and upper margin of second dorsal concave. Base of anal short, close to subcaudal, with which its base is united by a membrane; anal depth about equal to height of second dorsal. The bases of the anal and the subcaudal of this specimen are about a quarter of an inch apart, excepting the membrane, yet when the anal is at rest its hind border is in contact with nearly the whole anterior edge of the fin behind it. The color of the flanks is silver, of the back is light brownish, and of the fins is brown. Probably the colors vary with age and sex.

On a specimen of five and three-fourths inches in length the canals of the lateral system are not completely covered, as in the sixteen-inch individual; they are slit lengthwise, as on Rhinochimaera, but on the larger one they are closed tubes with pores leading to the interior. The pectoral in this example does not reach backward of either the origin of the second dorsal or the base of the ventral. The arrangement of the spines on this small specimen is like that on the larger one; above the hind edge of the orbit on the outer side of the cranial canal there is a short longitudinal series of two or three; just inside of this at the inner side of the canal a series begins and extends forward for about twelve spines to the front end of the interorbital space, where it crosses to meet a similar series on the other side of the crown; close to the inner sides of the posterior extremities of these series there are several spines, sometimes but one; at each side of the median line, between the dorsals, there is a longitudinal series of fourteen or fifteen spines; a similar row of fourteen spines occurs at each side of the vertebral line between second dorsal and supracaudal.

Classification.

The intention in this section is to favor that nomenclature which was first applied with approximate correctness, and to follow the rules of priority in regard to designations for the higher groups as for the lower, the appeal for fair treatment in relation to credit and recognition being admitted to be quite as worthy in the case of the larger as in that of the smaller. It does not appear entirely just to carefully credit authorities for the names of species and at the same time to disregard the claims of those who have determined the values, affinities, and classification. Besides, a general acceptance of prior names tends to abate the multiplication of synonyms.

The history of the Chimaeroids begins at a much earlier date than that of Linné, as is seen in recognizable figures of Chimaera by Clusius, 1605, Exoticorum, page 137, by Aldrovandi, 1613, De Piscibus, Lib. III., pages 402 and 403, and by others; but it is no purpose of this writing to present either a complete history, bibliography, or synonymy. A few words on the origin of each of the terms adopted will suffice.

Linné used the name Chondropterygii in the first edition of his Systema, in 1735. He divided the fishes, as he knew them, into Plagiuri, Chondropterygii,

Branchiostegi, Acanthopterygii, and Malacopterygii. The same arrangement appears in his edition of Artedi's work, 1738, and in subsequent editions of the Systema up to and including the seventh, 1748. His Chondropterygii were the genera Raia, Squalus, Acipenser, and Petromyzon.

Gronow, 1754, following Linné, recognized the horizontal-tailed fishes, the Plagiuri, and the perpendicular-tailed fishes; the latter he subdivided into those with bony-rayed fins, under the names Malacopterygii, Acanthopterygii, and Branchiostegi, and those with cartilaginous-rayed fins, the Chondropterygii, which latter included the genera Callorhynchus, Acipenser, Squalus, Raia, and Petromyzon. He had adopted most of his groups and genera from Artedi and Linné; among the additions the genus Callorhynchus is of most present interest. It is from Gronow's hand that that genus appears in the ninth edition of the Systema, 1756, without mention of Chimaera, though the latter was established by Linné in 1754, two years before the publication of that edition.

Linné dropped the name Chondropterygii in the tenth edition of the Systema, 1758, for Amphibia nantes, and there the group contains Petromyzon, Raia, Squalus, Chimaera, Lophius, and Acipenser. Callorhynchus of Gronow, 1754, was buried in Chimaera of Linné, 1754. The arrangement is similar in the twelfth edition, with addition for the worse of Balistes, Ostracion, Tetrodon, Diodon, Cyclopterus, Centriscus, Syngnathus, and Pegasus.

Gmelin, 1788, in his edition of the Systema, returned to the name Chondropterygii, and, dropping the name Amphibia nantes and taking out the genus Lophius, constitutes the group as in the tenth edition with these exceptions. The other fishes, practically the bony fishes, he placed in the groups Apodes, Jugulares, Thoracici, Abdominales, and Branchiostegi. The group Chondropterygii, with varying inclusiveness, has persisted.

Cuvier, 1798, in the Tableau Élémentaire, improved the arrangement by so much as concerns the removal of Acipenser from the Chondropterygii, and by retaining in the order Petromyzon, Raia, Squalus, and Chimaera His orders were *Les chondroptérygiens*, *Les branchiostèges*, *Les apodes*, *Les jugulaires*, *Les thorachiques*, and *Les abdominaux*. This distribution with Latin names was followed by Gravenhorst, 1807, who added to the Chondropterygii the genus Gastrobranchus of Bloch, 1795, for Myxine glutinosa of Linné, 1754.

La Cepède, 1798, divided the class into cartilaginous fishes and bony fishes. He accepted the Chondropterygii of his predecessors, but wrongly included various bony fishes, and though he carefully subdivided the groups he designated the minor divisions only by the names, apodes, jugulaires, thoracins, and abdominaux in each case, repeating these names over and over again.

Duméril, 1806, in the Zoologie Analytique, gave French names, derived from the Greek, to La Cepède's subdivisions. His first order of the cartilaginous fishes was the Trématopnés, with two families, the Cyclostomes and the Plagiostomes. His second order, and third family, he named Chismopnés: its contents were the so-called genera Baudroie, Lophie, Baliste, and Chimère. His third order, and fourth family, Eleuthéropomes, included Polyodon, Aci-

pensère, and Pégase, and his fourth and last order of the cartilaginous fishes, the Télécbranches, contained three families properly belonging to the bony fishes. It is not necessary to follow the remainder of the orders, as they are outside of the limits of this paper. It will be seen that if the bony fishes improperly included are withdrawn from the second order, the Chismopnés, the only reason for its existence lies in the genus Chimaera. Duméril gives the derivation of the word Chismopnés as "de Χισμη fente et de Πνέος respirant." If he had derived it from Χάσμα or Χάσμη and made the word Chasmatopnés or Chasmopnés, or from Σχίσμα or Σχισμή, making the word to be Schismatopnés or Schismopnés there might have been less questioning of the etymology. It is only a change of a letter in either case, but authorities differ as to whether a correction should be applied.

Rafinesque, 1815, also lost sight of the limits between the cartilaginous and the bony fishes. He took Duméril's third order for his own sixth, and latinized the French name Chismopnés in the form Chismopnea. He placed in this order the family Branchismea, with three subfamilies, the Chimeria, the Balistia, and the Lophidia, and the family Meiopteria, with two subfamilies of eels, the Echelia and the Chlopsidia. All of this order except the Chimeria belonged among the bony fishes. His seventh order, the Tremapnea, was with considerable additions Duméril's first, the Trématopnés. Rafinesque put into this order (1) the Ophictia, consisting of three subfamilies of eels, (2) the Plagiostomia, Duméril's Plagiostomes, with two subfamilies, the Antacea, Sharks, and the Platosomia, Skates, and Rays, and (3) the Cyclostomia, with two subfamilies, the Lampredia and the Myxinia. As in case of Duméril's Chismopnés, the future of Rafinesque's Chismopnea depended wholly on his Chimeria.

Cuvier, 1817, again made a more exact separation of the Chondropterygii and the bony fishes, in which Rafinesque's Chismopnea were widely scattered; the Balistia became Plectognathes (Plectognatha Latr., 1825, Plectognathi Bonap., 1831), the Lophidia became Acanthopterygiens, the Meiopteria became Malacoptérygiens apodes, and the Chimeria were placed in the Chondroptérygiens a branchies fixes under Les Chimères. The two genera Chimaera and Callorhynchus were accepted by Cuvier. His changes notwithstanding, the order Chismopnea still existed by virtue of the Chimaeroids contained in it.

Latreille, 1825, made use of the name Ichthyodera for his third class, Cuvier's Chondroptérygiens a branchies fixes, placing in this class two orders, the first, Selacii, Duméril's Plagiostomes, with three families, the Squalides, the Platysoma, and the Acanthorhina (Chimaerae), and the second, Cyclostoma, with two families, the Auloedibranchia (Petromyzonidae) and the Diporobranchia (Myxinidae). The name Acanthorhina cannot be looked upon as particularly appropriate since Blainville, 1816, had used Acanthorhinus for Spinacoid sharks.

Bonaparte, 1831, subdivided his subclass Chondropterygii into Section 1 Chismopnei (Branchiati) and Section 2, Trematopnei (Spiraculati). In the first he placed his order 6, Eleutheropomi (Sturiones), Family 32, Acipenseridae, and his order 7, Acanthorrhini, Family 33, Chimaeridae; and in the second

he put his order 8, Plagiostomi (Selacii), Family 34, Squalidae, and Family 35, Rajidae, and his order 9, Cyclostomi, Family 36, Petromyzonidae. The same objections apply in the case of his order Acanthorrhini as in that of Latreille's, Family Acanthorhina.

Müller, 1834–35, settled the question of priority so far as concerned him by a name of his own, Holocephala. He included in this order only Thienemann's 1828, Family Chimaerae, Bonaparte's, 1831, Chimaeridae, containing the two genera discovered in 1754. The new name was supposed to be more appropriate for these Chondropterygii on account of the suspensorial connections of the lower jaws. However, if it be taken into consideration that the rostral cartilages of the Antacea, Sharks, and of the Platosomia, Skates and Rays, are outgrowths of the skull, and not articulated to it, while the same cartilages of the Chimaeroids are articulations, and not solid outgrowths from the skull, it will appear that the term Holocephala would be quite as appropriate for Plagiostomia as for Chismopnea.

The living Chimaeroids may be classified as below.

CHISMOPNEA Raf., 1815.

Chismopnés Dum., 1806.
Holocephala Müll., 1834.

Chondropterygii, with a compressed and massive body, an attenuated caudal region, a single external branchial cleft on each side, an erectile first dorsal spine and fin, a cartilaginous skeleton, a notochord not divided in vertebrae, a brain in which the hemispheres are remote from the optic lobes, a rostrum of which the cartilages are articulated to the skull, a dentition of two pairs of upper and one pair of lower dental plates, a frontal tenaculum, ventral tenacula and claspers on the male, and without distinct suspensorial cartilages for the lower jaws, without shagreen on the skin and without a diverticular gland on the intestine. Oviparous, the egg deposited in a horny case.

RHINOCHIMAERIDAE Garm., 1901.

Chismopnea, with an elongate, pointed, movable proboscis, with olfactory bulbs and hemispheres of the brain remote from one another, with a notochord surrounded by narrow cartilaginous rings, with a simple cartilage in each clasper of the male, and with subtubular lateral canals opening outward through a narrow slit. At present this family contains two genera of a single species each.

Species with compressed proboscis and having teeth with cutting edges and without tritors on the sides of the plates.

Rhinochimaera pacifica Mits.; Garm., 1901.

Species with depressed proboscis and with palatine and mandibular teeth bearing numerous tritors in several series on the sides of the plates.

Harriotta raleighana Goode & Bean, 1894.

CALLORHYNCHIDAE Garm., 1901.

Chismopnea, with a short proboscis ending in a retrorse leaf-shaped extremity, with palatine and mandibular teeth bearing one or two large tritors on the side of each plate, with a notochord not surrounded by narrow cartilaginous rings, with a simple cartilage in each clasper of the male, and with lateral canals that in the adult become tubular, opening outward through pores. Only one genus now known.

CALLORHYNCHUS Gronow, 1754, 1763.

From the teeth of the specimens at hand five species are to be distinguished.

Callorhynchus callorhynchus Linnè, 1758.
Callorhynchus milii Bory, 1823.
Callorhynchus smythii Benn., 1839.
Callorhynchus capensis Dum., 1865.
Callorhynchus tritoris Garm.

Callorhynchus antarcticus La C., *C. australis* Shaw, and *C. peronii* Dum. appear to be synonyms for *C. callorhynchus*. *Callorhynchus tasmanius* Rich. is not to be separated from *C. milii*. Dr. Filippi, 1892, described two species without giving the dental characters; one of these, his *C. antarticus*, resembles *C. smythii*, the other is much like *C. callorhynchus*. Dr. Alcock, 1891, secured indications of the existence of another species from the Bay of Bengal; it was named *C. indicus* by Garman, 1899, from the horny egg case, and is probably to be found only at great depths. The fossil species *C. hectori* Newton, 1876, is to be placed with *C. capensis*, at least until more than the dentition is known about it.

CHIMAERIDAE Thien., 1828.

Chimaerae Thien., 1828.
Chimaeridae Bonap., 1831.

Chismopnea without a proboscis, with tritors situated anteriorly on the edges of all the dental plates, with hemispheres and olfactory bulbs of the brain in contact, with a notochord surrounded by narrow cartilaginous rings, with a trifid cartilage in each clasper of the male, and with sulcate lateral canals.

CHIMAERA Linné, 1754, 1758.

Six living species of this genus are recognized.

Chimaera monstrosa Linné, 1754, 1758.
Chimaera phantasma Jordan & Snyder, 1900.
Chimaera affinis Capello, 1868.
Chimaera colliei Lay & Bennett, 1839.
Chimaera ogilbyi Waite, 1898.
Chimaera mitsukurii (Dean) Jordan & Snyder, 1904.

The synonymy of *Chimaera monstrosa* includes *C. argentea* Ascan., 1772, *C. borealis* Shaw, 1804, *C. mediterranea* Risso, 1826, *C. cristata* Faber, 1829, and *Callorhynchus centrina* and *Call. atlantica* of Gronow and Gray, 1854; and that of *Chimaera affinis* contains *C. plumbea* Gill, 1877, and *C. abbreviata* Gill, 1883.

Chimaera monstrosa and *C. phantasma* have the anal fin distinct from the subcaudal; they differ in this respect from the other species. One of the latter, *C. colliei*, has been made the type of a new genus, *Hydrolagus*, by Gill, 1862. This genus was originally "distinguished from Chimaera by the absence of an anal fin and the triple division of the sexual organ of the male." The absence of the triple division of the clasper is more apparent than real, since the cartilage of that organ is trifid in males of all the species of the genus. On *Chimaera colliei* two of the divisions of the cartilage are wrapped together by the skin so as to present the appearance of a single division. If absence of the anal fin is to make generic separation necessary, then *Chimaera affinis* would be placed with *C. colliei*, though actually farther removed by structure from the latter than *C. monstrosa*. As may be seen by comparison of the figures published here, in dental characters and in those of the brain and the skeleton *Chimaera colliei* agrees closely with *C. monstrosa*. In some respects *Chimaera mitsukurii* accords with *C. colliei*, as in the apparently bifid claspers and the lack of an anal fin, but it has a much longer caudal filament than that species.

The right of Chimaera to be considered the most differentiated of the Chismopnea will hardly be questioned. By rostrum, dentition, brain, claspers, and lateral system it is the farthest removed from Rhinochimaera.

PLATE 1.

Rhinochimaera pacifica Mits. : Garm.

Fig. 1. Side view, $\frac{1}{3}$ natural length.
Fig. 2. Side view of trunk, showing intestines and skeletal features, $\frac{2}{3}$ nat.

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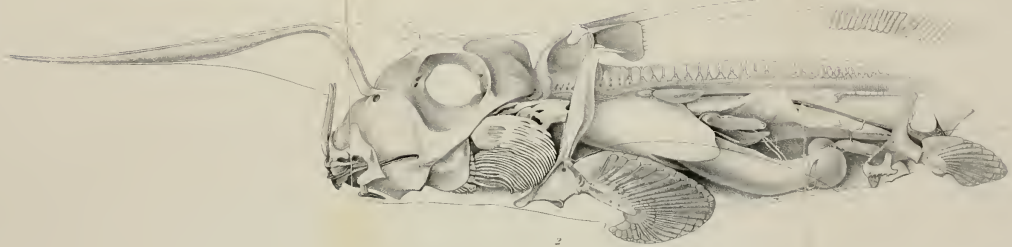

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PLATE 2.

Fig. 1. Head of Rhinochimaera pacifica, seen from above, $\frac{1}{2}$ natural length.
Fig. 2. Head of Rhinochimaera pacifica, seen from below, $\frac{1}{2}$ nat.
Fig. 3. Head of Harriotta raleighana G. & B., seen from above, $\frac{5}{6}$ nat.
Fig. 4. Head of Harriotta raleighana, seen from the side, $\frac{5}{6}$ nat.
Fig. 5. Head of Harriotta raleighana, seen from below, $\frac{5}{6}$ nat.

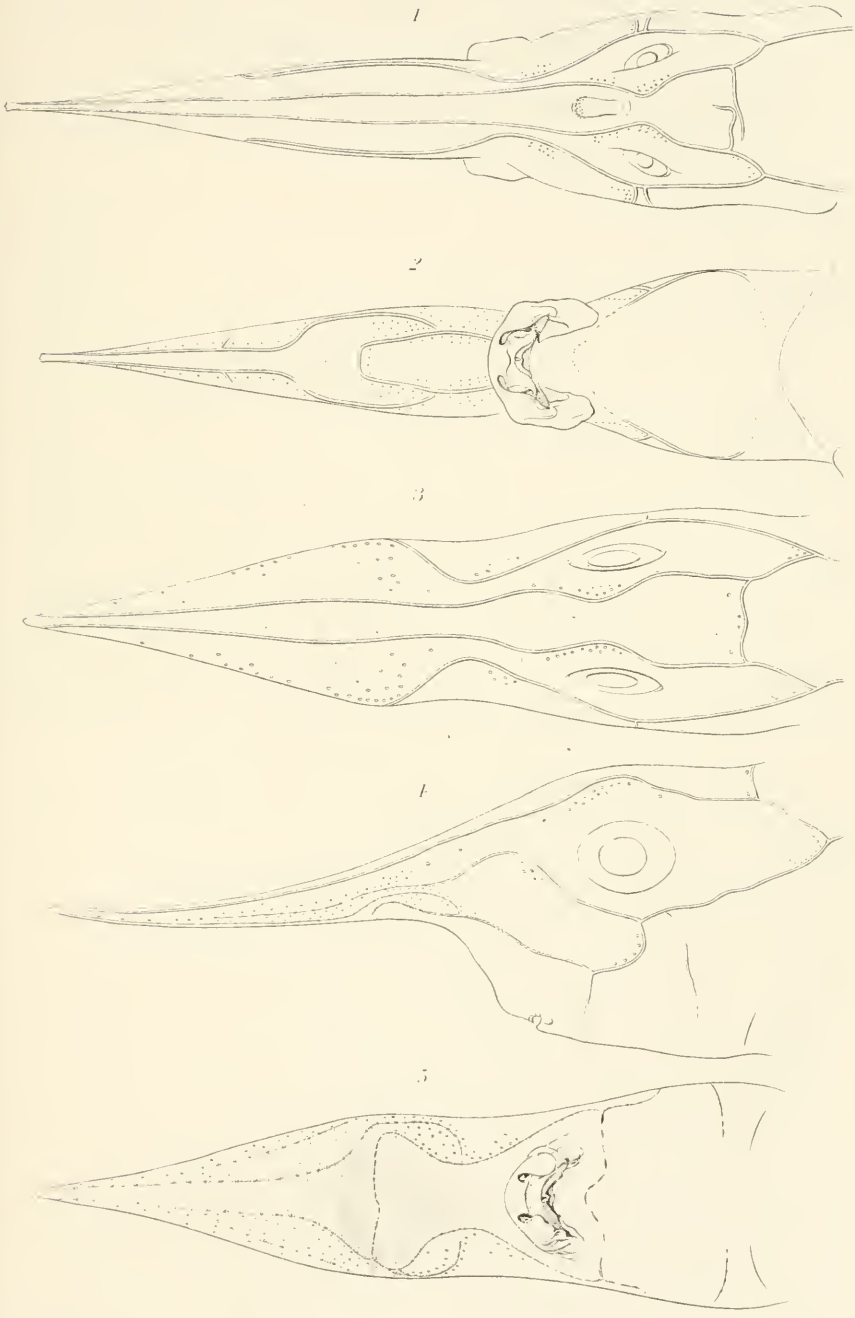
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PLATE 3.

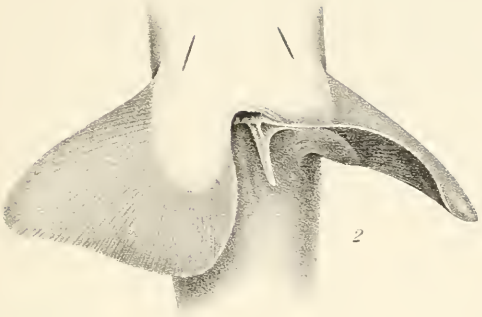
Fig. 1. Rhinochimaera pacifica, ventrals, claspers, and ventral tenacula, $\frac{1}{2}$ natural length.

Fig. 2. Callorhynchus callorhynchus Linné, ventrals, claspers, and ventral tenacula of young, nat. size.

Fig. 3. Carcharhinus terrae-novae Rich., ventrals and claspers, nat. size.

Fig. 4. Rhinochimaera pacifica, diagram of claspers and ventral tenacula, nat. size.

Fig. 5 Rhinochimaera pacifica, ventral fin and clasper, as seen from above, $\frac{2}{3}$ natural length.



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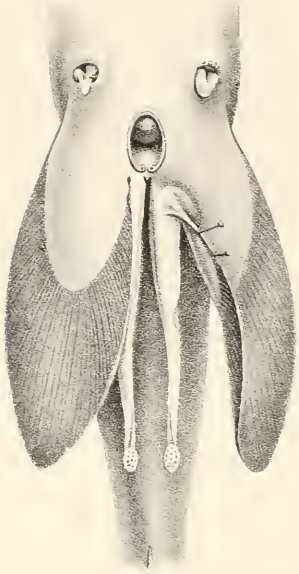

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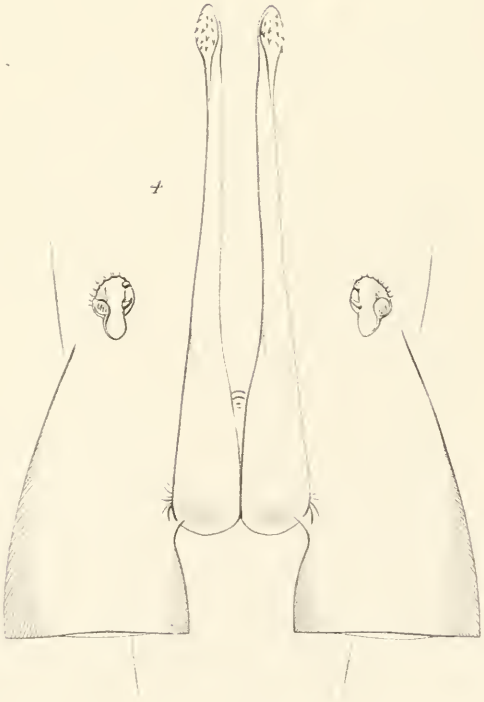

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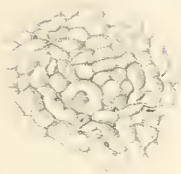
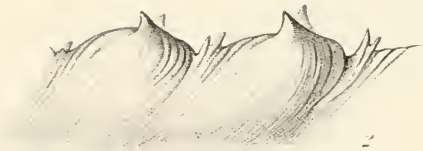
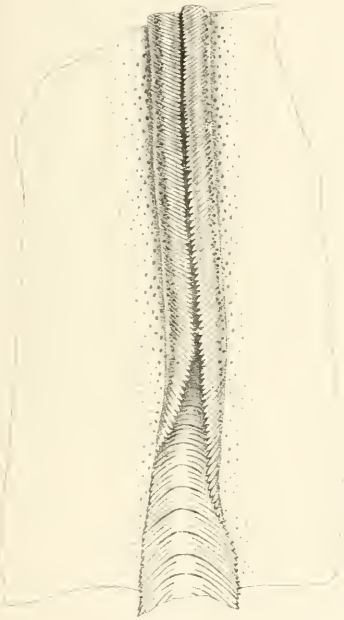
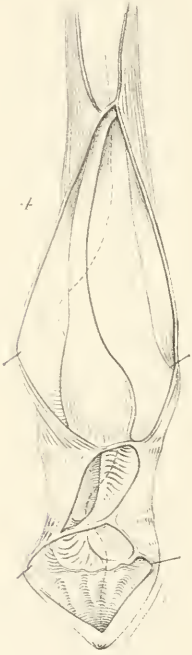
PLATE 4.

Fig. 1. Harriotta raleighana, appearance of skin on the flank, 4 times natural length.
Fig. 2. Rhinochimaera pacifica, armature of upper edge of supracaudal fin, 3 times nat.
Fig. 3. Rhinochimaera pacifica, lateral canal and rings, 8 times nat.
Fig. 4. Rhinochimaera pacifica, intestine slit open to show spiral and valves.
Fig. 5. Raia laevis Mitch., ventral fins with claspers turned forward.









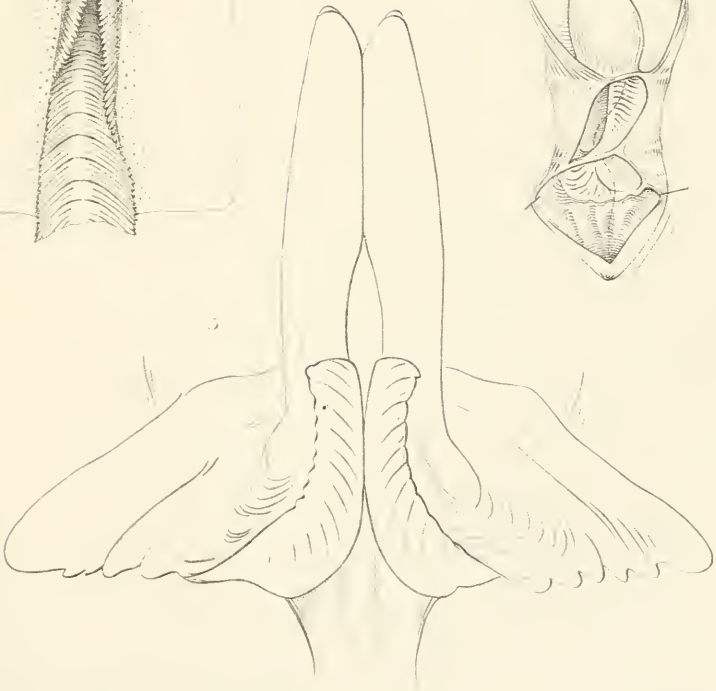
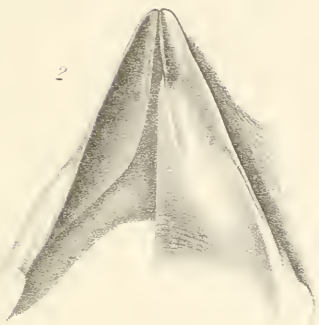


PLATE 5.

Fig. 1. Rhinochimaera pacifica, vomerine and palatine teeth from below, nat. size.
Fig. 2. Rhinochimaera pacifica, mandibular teeth, seen from above, nat. size.
Fig. 3. Harriotta raleighana, vomerine and palatine teeth, seen from below, twice nat. length.
Fig. 4. Harriotta raleighana, mandibular teeth, seen from above, twice nat.
Fig. 5. Harriotta raleighana, tongue showing upper surface, twice nat.
Fig. 6. Harriotta raleighana, vomerine and palatine teeth of young, twice nat.
Fig. 7. Harriotta raleighana, mandibular teeth of young, twice nat.
Fig. 8. Harriotta raleighana, vomerine and palatine teeth of very young, 4 times nat.
Fig. 9. Harriotta raleighana, mandibular teeth of very young, 4 times nat.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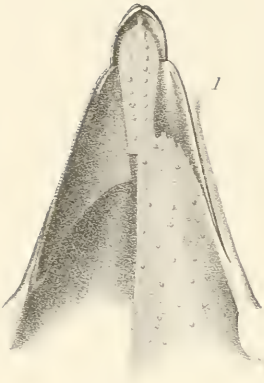
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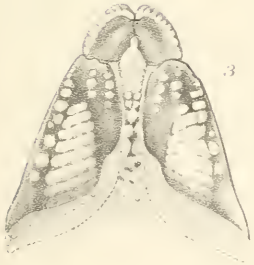
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PLATE 6.

Figs. 1 and 2. Callorhynchus smythii Benn., vomerine and palatine and mandibular teeth, nat. size.

Figs. 3 and 4. Callorhynchus smythii, vomerine, palatine, and mandibular teeth of very young, nat. size.

Figs. 5 and 6. Callorhynchus capensis Dum., vomerine, palatine, and mandibular teeth, nat. size.

Figs. 7 and 8. Callorhynchus milii Bory, vomerine, palatine, and mandibular teeth, nat. size.

Fig. 9. Callorhynchus tritoris Garm., vomerine teeth and one palatine tooth, nat. size.

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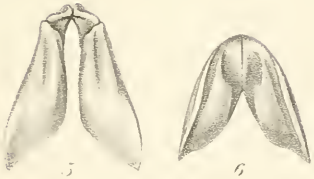
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PLATE 7.

Figs. 1 and 2. Chimaera monstrosa Linné, vomerine, palatine, and mandibular teeth, nat. size.

Fig. 3. Chimaera monstrosa, much-worn mandibular tooth from the inner side, nat. size.

Figs. 4 and 5. Chimaera colliei Benn., vomerine, palatine, and mandibular teeth, nat. size.

Fig. 6. Chimaera colliei, outlines of inner side of mandibular tooth, nat. size.

Figs. 7 and 8. Callorhynchus callorhynchus Linné, vomerine, palatine, and mandibular teeth, nat. size.

Fig. 9. Callorhynchus callorhynchus, mandibular tooth, from inner side, nat. size

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PLATE 8.

Rhinochimaera pacifica.

Intestine, slit open to show valves and spiral, spermaries, and kidneys, with liver and pancreas in outline.

PLATE 9.

Rhinochimaera pacifica.

Fig. 1. Liver, gall-bladder, and ends of stomach and intestine, with heart in outline, nat. size.

Fig. 2. Lower view of genital and urinary organs, with intestine outlined, nat. size.

Fig. 3. Heart, nat. size.

Fig. 4. Bulbus slit open to show the rows of valves, 4 times natural length.

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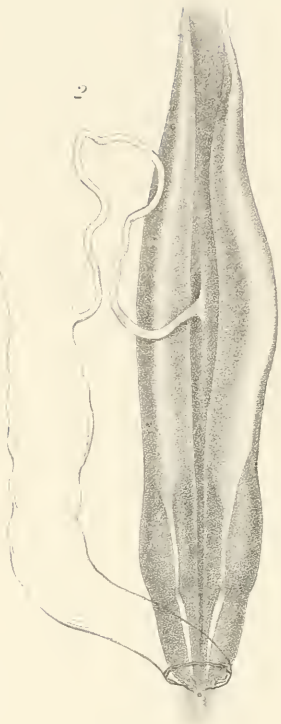
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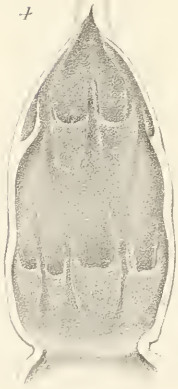
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PLATE 10.

Callorhynchus callorhynchus.

Skeletal features and viscera of very young specimen, from the side, twice nat.

PLATE 11.

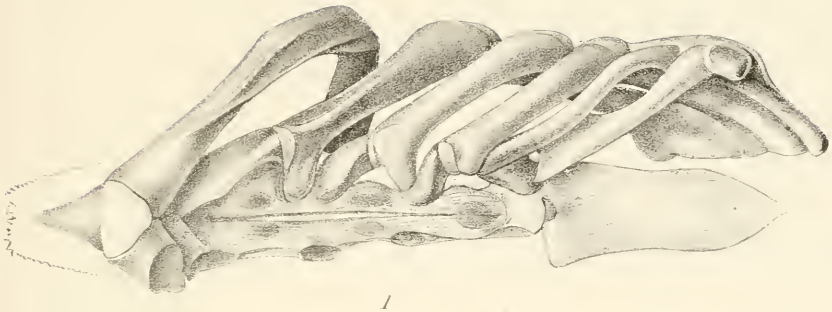
Chimaera monstrosa.

Skeletal features of head and anterior part of body, from the side, nat. size.

PLATE 12.

Rhinochimaera pacifica.

Fig. 1. Branchial cartilages of left side from below, nat. size.
Fig. 2. Branchial cartilages of left side from above, nat. size.
Fig. 3. Glossohyal, ceratohyal, epihyal, and anterior basibranchial from the side, nat. size.



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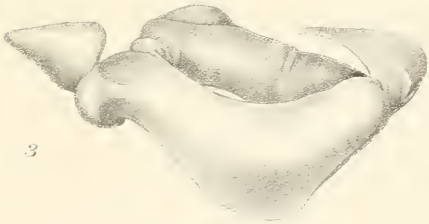

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PLATE 13.

Fig. 1. Chimaera monstrosa, branchial skeleton, seen from above, nat. size.
Fig. 2. Chimaera colliei, branchial skeleton, upper view, nat. size.
Fig. 3. Callorhynchus smythii, branchial cartilages, upper view, nat. size.

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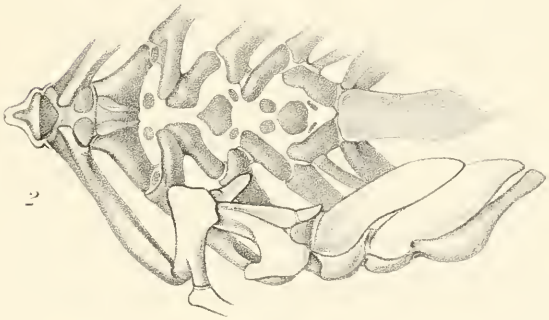

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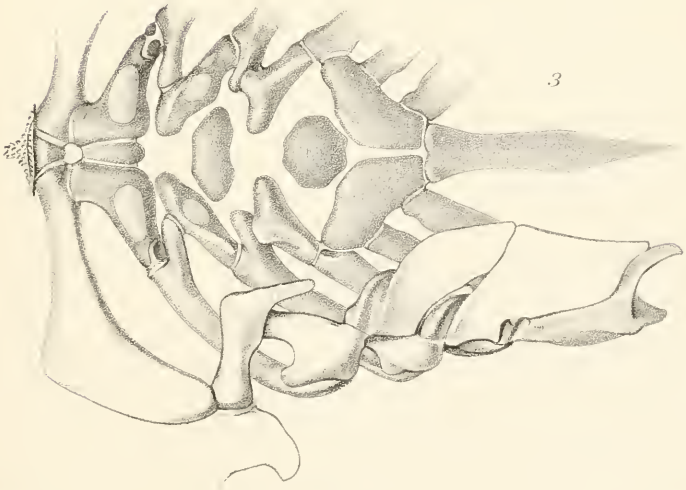

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PLATE 14.

Rhinochimaera pacifica.

Figs. 1 to 3. Brain, from the side, from below, and from above, nat. size.
Figs. 4 to 7. Otoliths, 4 times natural length.

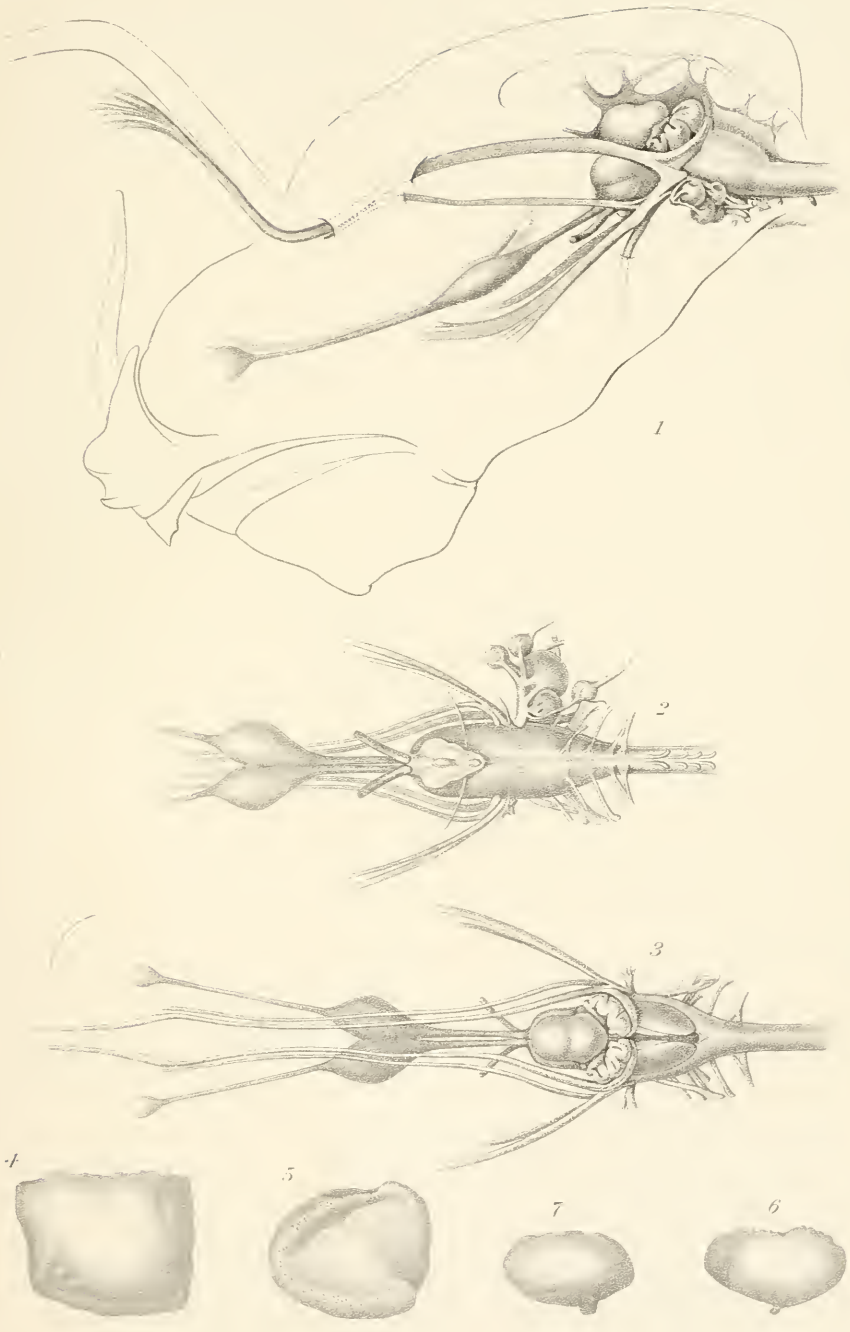
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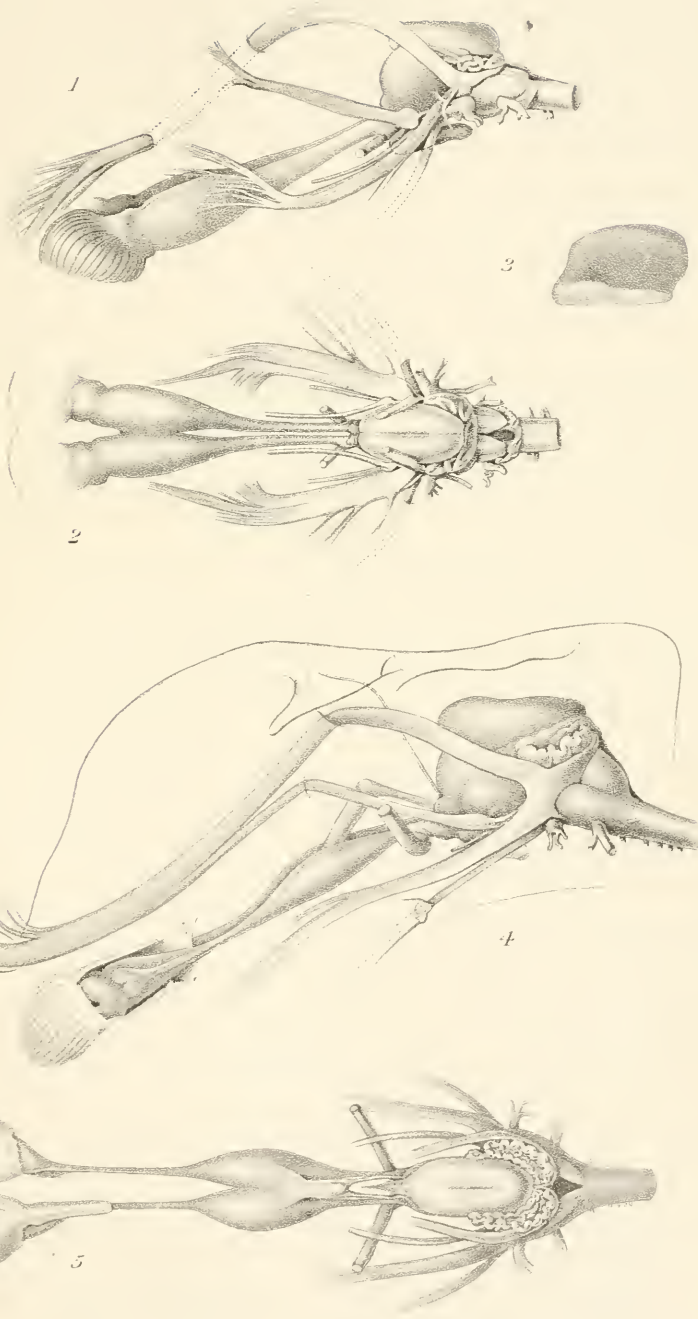
PLATE 15.

Figs. 1 and 2. Chimaera colliei, brain from the side and from above, nat. size.
Fig. 3. Chimaera colliei, otolith, 4 times nat. length.
Figs. 4 and 5. Callorhynchus milii, from the side and from above, nat. size.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C. HARTLAUB. The Comatulæ of the "Blake," with 15 Plates.
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Reports on the Scientific Results of the Expedition to the Tropical Pacific, in charge of ALEXANDER AGASSIZ, on the U. S. Fish Commission Steamer "Albatross," from August, 1899, to March, 1900, Commander Jefferson F. Moser, U. S. N., Commanding.

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